The Impact of Regulations on Earnings Management via Related Party Sales in China

By

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Declaration

I certify that this thesis does not, to the best knowledge and belief, incorporate without acknowledgement any material previously submitted for a degree or diploma in any institution of higher education, or contain any material previously published or written by another person except where due reference is made in the text.

I certify that this thesis is, to the best knowledge and belief, the result of original research and written solely by me, subject only to the acknowledgements on the following page.

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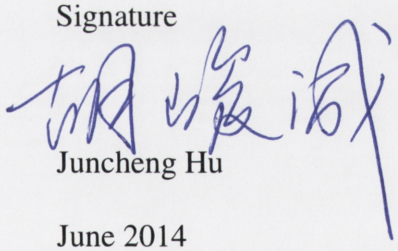

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The journey of a thousand miles begins with a single step.

- *Laozi* (571BC – 471BC)

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Abstract

This study examines the impact of regulations on earnings management via related party sales (RPSs) in China. RPSs have been regarded as a primary means of earnings management in China. Manipulated RPS might involve sales of product or services between related parties at distorted prices or inflated sales volumes. However, manipulating transaction prices is less costly than inflating volumes as price manipulation does not require unnecessary production and transfer costs. The abuse of RPSs was associated with a series of corporate failures and a huge decline in investor confidence at the late 1990s. These scandals were highly publicised and regulators subsequently implemented an accounting treatment regulation in 2001, aimed at reducing earnings inflation via RPSs.

Despite significant regulatory changes, the scope of events that led to the passage of the 2001 RPT measurement regulation, and the consequences of the regulatory changes have yet to be studied. This thesis addresses two sets of research questions in this study. The first research question examines whether there is a change in the prevalence of price inflation in RPSs before and after the 2001 RPT measurement regulation. The second research question examines motivations for using RPSs to inflate earnings, and the effect of regulatory change on the extent of earnings management for firms with incentives to inflate earnings.

To carry out the investigation, this thesis estimates earnings management using RPSs in two ways. The change measure is defined as the difference between RPSs in the current year and previous year. The change in RPSs is decomposed into the positive change in RPSs denoting income-increasing RPSs and the negative change in RPSs denoting

income-decreasing RPSs. The level measure is defined as the difference between a firm's RPS and the mean RPS for all other firms in the same industry. I argue that, if there was a widespread use of transfer pricing techniques in RPSs to inflate earnings, there should be a positive association between the change in gross margin and income-increasing RPSs.

The results provide evidence that income-increasing RPSs are associated with price inflation in the pre-RPT regulation period but refer mainly to volumes inflation in the post-RPT regulation period. To my best knowledge, this is the first study to examine the nature of income-increasing RPSs by considering the prevalence of price versus volumes inflation in RPSs. Moreover, this study documents that both before and after the 2001 RPT measurement regulation, the level of RPS manipulation is abnormally higher for firms with incentives to use RPSs to meet the regulatory thresholds of new equity offerings or avoid special treatment policies when compared to firms in various control samples. However, suspected earnings management firms use significantly less RPSs after the regulatory change when compared to firms in similar circumstances prior to the regulatory change. The results provide evidence that the regulation in 2001 reduced but did not eliminate earnings inflation.

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List of Abbreviations

CEO	Chief Executive Officer
CSMAR	China Stock Market and Accounting Research
CSRC	China Security Regulatory Commission
GAAP	Generally Accepted Accounting Principles
IPO	Initial Public Offering
MOF	Ministry of Finance
MTB	Market-To-Book
OLS	Ordinary Least Squares
OWNCON	Ownership Concentration
PPE	Property, Plant and Equipment
PT	Particular Transfer
RMB	Renminbi (currency)
ROE	Return on Equity
RPP	Related Party Purchases
RPS	Related Party Sales
RPT	Related Party Transactions
SD	Standard Deviation
SEO	Seasoned Equity Offerings
SOE	State-Owned Enterprise
SSE	Shanghai Stock Exchange
ST	Special Treatment
VIF	Variance Inflation Factor

Chapter 1: Introduction

1.1 Introduction

This study examines the impact of regulations on earnings management via related party sales (RPSs) in China. RPSs have been regarded as a primary means of earnings management in China (Aharony et al. 2010; Jian & Wong 2010; Noronha et al. 2010; Lei & Song 2011). Manipulated RPS might involve sales of product or services between related parties at distorted prices (often referred to as transfer pricing techniques) or inflated sales volumes. However, manipulating transaction prices is less costly than inflating volumes, assuming volumes need to be verifiable, as price manipulation does not require unnecessary production and transfer costs. Moreover, using transfer pricing techniques to shift earnings between related parties can be more effective than accrual-based earnings manipulations that merely shift earnings between periods.

RPSs along with other types of related party transactions (RPTs) play an important role in tunnelling and propping activities. Sales of products to a related party at the below-market price can understate earnings, transferring wealth from the firm to the related party. This is known as the tunnelling hypothesis, which can be used for firms to expropriate minority shareholders' interests (e.g Cheung et al. 2006; Berkman et al. 2009; Cheung et al. 2009a; Jiang et al. 2010; Peng et al. 2010; Lei & Song 2011). The opposites of such transactions like sales to a related party at the above-market price would overstate earnings, transferring wealth from the related party to the listed firm. This is known as the propping-up hypothesis, which can be used by firms to beat various benchmarks (e.g. Cheung et al. 2009b; Aharony et al. 2010; Jian & Wong 2010; Lo et al. 2010; Yeh et al. 2012). In the Chinese setting where most listed firms have

concentrated ownership, propping and tunnelling activities via RPTs are very common. Mr. Zhou Xiaochuan, former Chairman of the China Security Regulatory Commission (CSRC), stated at the seminar of Corporate Governance on Chinese Listed Firms in 2001:

> Chinese large and medium enterprises have a common characteristic that is the level of sate-share holdings is extremely high. If there is a blockholder, from the perspective of voting rights, there is a high likelihood of engaging in unfair RPT. Currently, the issue of RPT is very serious in China. If firms have incentives to inflate earnings, they can prop up them by these transactions; if they want to transfer profits, they can also tunnel resources by these transactions. These sorts of propping and tunnelling activities often occur, leading to a poor market confidence. As a result, research on the background and reasons of RPT is very urgent.[1]

The abuse of related party sales was associated with a series of corporate failures and a huge decline in investor confidence in the late 1990s. In particular, the scandal of *Qiong Minyuan* was regarded as the most serious securities fraud since the establishment of China's capital market. 94 per cent of *Qiong Minyuan*'s total profits in 1996 were generated from RPSs at inflated prices or even fake RPSs.[2] As an additional anecdotal example, *GuangXia Industry* manipulated both RPS price and volumes to inflate earnings from1999 to 2001. 748 million sales of *GuangXia Industry* were from 26 related parties that should have been consolidated over 1999 to 2001. The gross margin of *GuangXia Industry* was 46 per cent that is abnormally higher than the industry average in 2000. The *GuangXia Industry* collapsed in 2001, and its auditing firm was liquidated because of material audit deficiencies.[3]

Following these scandals, the Ministry of Finance (MOF) implemented the *Provisional Regulation on the Accounting Measurement for Sales of Assets and Other Transactions*

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[1] Retrieved from http://www.chinanews.com/2001-05-31/26/94912.html, on 20 February 2014 (in Chinese).
[2] Retrieved from http://stock.hexun.com/2008/qmy30/index.html on 20 February 2014 (in Chinese).
[3] Retrieved from http://www.people.com.cn/GB/jinji/35/159/20020526/737124.html on 20 February 2014 (in Chinese).

between Related Parties on 21 December 2001 (hereafter the 2001 RPT measurement regulation).[4] This regulation fundamentally changed the accounting treatment for RPTs by mandating a fair value measurement system. In terms of RPSs, which are the primary interest of this study, this regulation proposed several methods to calculate the fair value of RPSs. Under this regulation, if the transacted price of a RPS is above its fair value, the price differential (price less fair value) cannot be recognised as earnings. Instead, the price differential must be credited to a *Capital-Surplus Price Differential of RPT* account. This account is notionally a capital reserve account, but it cannot be used to increase reported capital or offset future losses.

Despite the MOF proposal of significant regulatory changes, the scope of events that led to the passage of the 2001 RPT measurement regulation, and the consequences of the resulting regulatory changes have yet to be systematically studied. Specifically, there are two important issues that remain unclear. First, it is unclear whether in the period prior to the regulatory change, there really was a prevalent use of inflated RPSs to prop up earnings or whether these highly publicised scandals were just isolated instances of financial manipulations. Second, it is unclear whether in period after the regulatory change the 2001 RPT measurement regulation was successful in reducing earnings manipulation via RPSs, because there are continuing reports of RPSs being used to inflate earnings after 2001. For instance, Pan et al. (2006) suggests that sole reliance on the fair value treatment for RPSs might not be sufficient to eliminate earnings management due to the existence of high volumes of such transactions in China. This study helps to fill this void by investigating the effect of the 2001 RPT measurement regulation in RPS manipulation.

[4] The Chinese title of this regulation is '关联方之间出售资产等有关会计处理问题暂行规定'. The regulation can be retrieved from the official website of the ministry of finance of China: http://www.mof.gov.cn/zhengwuxinxi/caizhengwengao/caizhengbuwengao2002/caizhengbuwengao20022/200805/t20080519_21110.html

Given that the 2001 RPT measurement regulation focuses mainly on RPT price inflation, I address two sets of research questions in this thesis:

1. I first evaluate the prevalence of price inflation in RPSs in the period before and after the regulatory change in 2001. The primary motivation for conducting this analysis is to investigate whether the period prior to the passage of the 2001 RPT measurement regulation was characterised by a widespread use of price inflation in RPSs, and whether the regulatory change affected the prevalence of price inflation in RPSs.
2. I then examine motivations for using RPSs to inflate earnings and the effect of regulatory change on the extent of earnings management activities for firms with incentives to inflate earnings. This investigation is motivated by the previous literature suggesting that non-recurring items are widely used in China to beat the regulatory thresholds of new equity offerings or avoid delisting (e.g. Chen & Yuan 2004; Chen et al. 2008; Haw et al. 2005; Yu et al. 2006). I examine whether RPSs can also serve for these purposes and whether the degree of RPS manipulation has declined for firms having incentives to inflate earnings after the regulatory changes.

1.2 Price Inflation in Related Party Sales

The first research question of this thesis relates to the prevalence of price inflation activities in RPSs before and after the effect of the 2001 RPT measurement regulation. To examine this question, I estimate earnings management using RPSs in two ways. I first model the change measure, defined as a change in RPSs regarding the difference between RPSs in the current year and RPSs in the previous year. I decompose these

changes as positive changes in RPSs denoting income-increasing RPSs and negative changes in RPSs denoting income-decreasing RPSs. I then model the level measure, defined as the difference between a firm's RPS and the mean RPS for all other listed firms in the same industry. I also deconstruct the industry-mean adjusted RPSs into positive and negative. I similarly measure the change in gross margins and industry-mean adjusted gross margins to proxy for transfer pricing manipulations.

The data of RPTs are manually collected from annual reports. Other accounting variables are collected from the China Stock Market and Accounting Research database (CSMAR). The final sample of RPS has 4,611 firm-year observations. To examine the effectiveness of the 2001 RPT regulation in reducing earnings inflation, I divide the sample period into three regulatory regimes.[5] As the 2001 RPT regulation was effective from 21 December 2001 and had very limited effects in the 2001 reports, I define the years 1999 to 2001 as the pre-RPT regulation period, the year 2002 as the transition period and 2003 to 2005 as the post-RPT regulation period.[6]

I argue that, if the period prior to the regulatory change was characterised by a widespread use of transfer pricing techniques in RPSs to inflate earnings, then there should be a positive association between the change in gross margin and income-increasing RPSs before the regulatory change. If the regulation effectively reduced price

[5] The first report period starts in 1999 because 1997 was the first year requiring disclosure of RPTs in China with poor compliance, and I use lagged data (starting in1998) to calculate change measures.

[6] The 2001 RPT regulation has very limited effects in 2001 because this regulation applies only to RPTs traded after 21 December 2001. Firms are not required to make adjustments for RPTs traded before the effective date. Therefore, I include the year 2001 in the pre-RPT regulation period, consistent with the requirement of the Shanghai and Shenzhen stock exchanges that require firms listed on these two stock exchanges adopt the 2001 RPT measurement regulation since 2002. This regulation was widely published and cited in the Chinese official media in January, 2002.Retrieved from the Shenzhen stock exchange website on 20 February 2014 (in Chinese):
http://www.szse.cn/szseWeb/FrontController.szse?ACTIONID=15&ARTICLEID=82&TYPE=0
http://news.xinhuanet.com/fortune/2002–01/14/content_237400.htm

inflation in RPSs, then there should be no significant relationship between the change in gross margin and income-increasing RPSs after the regulatory change.

I regress the change in gross margin on income-increasing RPSs and a set of control variables. I found that the change in gross margin positively associated with income-increasing RPSs in the pre-regulation period, but the association is not significant in the post-regulation period. I then regress the level of gross margin on positive industry-mean adjusted RPSs. The results are consistent with the change model, providing further evidence for price inflation in the pre-RPT regulation period. I also conduct a series of robustness checks, and the results are qualitatively the same. Overall, the results provide evidence that transfer pricing techniques via income-increasing RPSs are used widely to inflate earnings in the pre-RPT regulation period, but income-increasing RPSs refer mainly to volumes inflation in the post-RPT regulation period.[7]

1.3 Earnings Management Incentives

The second research question examines motivations for using RPSs to inflate earnings, and the effect of regulatory change on the extent of earnings management activities for firms with incentives to inflate earnings. Previous research has concluded that the main earnings management incentive in China was to beat profitability requirements for share issuance or avoid special treatment and delisting policies (e.g. Chen et al. 2008; Chen &

[7] In further tests, I use related party purchases (RPPs) as an alternative propping mechanism. For example, controlling owners can decrease their listed firms' cost of goods sold through a reduction in the purchase price or volumes. Because the 2001 RPT measurement regulation is applied to RPSs only and has no effect on the RPPs, I am motivated to examine the prevalence of purchase price deflation in RPPs before and after the effect of the 2001 RPT measurement regulation. Similar to RPSs, the change in RPPs is decomposed into a positive change in RPPs used as the proxy for income-decreasing RPPs, and a negative change in RPPs used as the proxy for income-increasing RPPs. I focus on the relation between the change in GM and the negative change in RPPs. If listed firms deflate the purchase price via income-increasing RPPs, there should be a negative association between the change in gross margin and income-increasing RPS. However, the results do not provide significant evidence for the use of transfer pricing techniques in RPPs to prop up earnings.

Yuan 2004; Haw et al. 2005; Yu et al. 2006). Since 1994, the CSRC has used return on equity (ROE) benchmarks to evaluate whether a listed firm is qualified for new equity offerings and should be considered as potential delisting firms. To be permitted to make a public equity offer, firms usually have to achieve the required benchmark rate for reported ROE in each financial year of three years prior to the application of new equity offerings (the benchmark rates have varied from 6 to 10% in different years). To avoid delisting, firms have to avoid three consecutive annual losses.

To examine whether RPSs are used to beat the ROE thresholds of new equity offerings, I identify firms with reported ROEs that satisfy the relevant regulatory threshold of new equity offerings, but do not satisfy the threshold when manipulated RPSs and associated cost of goods sold are excluded (referred to SUSPECT firms). To examine whether RPSs are used to avoid delisting, I identify firms with reported ROEs that are positive (but less than the regulatory threshold of new equity offerings), which become negative when manipulated RPSs and associated cost of goods sold are excluded (referred to ST firms). For each of these two types of suspected earnings management firms, I compare the extent of their RPS manipulation to other firms using different control samples. I argue that, if firms engage in RPS to beat the relevant ROE benchmarks, the extent of RPS manipulation would be higher for each of these suspected earnings management firms than other firms.

I regress earnings management proxies on incentive variables and a set of control variables. I find that the level of RPS manipulation is abnormally high for firms that have incentives to beat the ROE thresholds of new equity offerings, not only in the pre-RPT regulation period but also in the post-RPT regulation period. The results are consistent with previous earnings management literature in China (e.g. Chen & Yuan

2004; Chen et al. 2008; Haw et al. 2005; Yu et al. 2006) that earnings management activities in China are driven by profitability regulations of new equity offerings and delisting.

To examine whether the regulation has reduced the extent of earnings inflation for suspected earnings management firms, I interact the earnings management incentive variables with the regulatory regime dummy variables. The results document that the magnitude of RPS manipulation for firms having incentives to manipulate earnings is less in the post-RPT regulation period than previously, suggesting that the 2001 RPT measurement regulation reduced earnings inflation via RPSs. In a further test, I also control for corporate governance characteristics in previous models. I find that the level of ownership concentration is positively associated with the extent of RPS manipulation, and the level of board independence is negatively associated with extent of RPS manipulation. The results indicate that ownership concentration contributes to the level of excess RPSs while the board independence might constrain the use of RPSs to some extent.

The final part of this thesis attempt to distinguish the use of RPSs from discretionary accruals. The examination is motivated by the findings of Jian and Wong (2010) that RPSs serve as a substitute to discretionary accruals to inflate earnings to beat the regulatory thresholds of new equity offerings. Because the 2001 RPT measurement regulation significantly increased the cost of price inflation in RPSs, I particularly examine the potential effects of 2001 RPT regulations on the trade-offs between these two earnings management tools. This study provides evidence that in the pre-regulation period firms use less discretionary accruals when they have opportunities to beat the

regulatory thresholds via RPSs. However, this substitution relation between RPSs and discretionary accruals becomes insignificant in the post-regulation period.

1.4 Contribution and Significance

This study contributes to the existing literature in several ways. First, this study contributes to the theoretical literature concerned with the role of RPTs. The U.S-based study suggests that RPTs represent a natural element of business, and firms with high volumes of these transactions might not necessarily commit financial fraud (Gordon et al. 2004). The results in this thesis highlight that in countries where most firms have concentrated ownership such as China, RPTs are not often conducted at arms' length basis. This study provides empirical evidence for the argument of La Porta et al (1999) that RPTs can be used to transfer corporate resources to prop up earnings.

Second, this thesis links with previous literature concerned with the motivations behind RPTs. Previous literature suggests that RPTs can be used for both propping and tunnelling purposes. The results are aligned with the propping literature (Aharony et al. 2010; Jian & Wong; 2010; Lo et al. 2010; Yeh et al. 2012) by documenting that RPSs are widely used to beat the regulatory benchmarks of new equity offerings and delisting in China.

Third, this study also extends the propping literature concerned with RPSs (Aharony et al. 2010; Jian & Wong 2010) by examining the effectiveness of the 2001 RPT regulations in restricting earnings management activities. [8] Moreover, this study

[8] Aharony et al. (2010) and Jian and Wong (2010) use the data prior to the effect of the new RPT regulation in 2001, and do not address the issue that RPSs could be manipulated either from transaction prices or volumes.

provides an original approach to examine whether RPSs are widely associated with transfer pricing techniques in China. Specifically, this thesis investigates the nature of earnings management via RPSs by investigating whether income-increasing RPSs are associated with price inflation in the period before and after the regulatory change. The results conclude that listed firms inflate RPS prices in the pre-RPT regulation period, but focus on volumes inflation in the post-RPT regulation period. To my best knowledge, this is the first study to consider the prevalence of price inflation versus volumes inflation in RPSs.

Fourth, by investigating the use of recurring RPSs before and after the 2001 regulatory change, this study substantially advances the literature on earnings management, which focused on non-recurring items prior to 2001 (e.g. Chen et al. 2008; Chen & Yuan, 2004; Haw et al. 2005; Yu et al. 2006). This thesis sheds light on the RPSs that listed firms could also use recurring items such as RPSs achieving the earnings targets of equity offerings.

Fifth, this study provides some insights into corporate governance proxies that affect the extent of earnings inflation via excess RPSs, which also links with prior corporate governance research (Gordon et al. 2004; Hwang et al. 2013; Lei & Song. 2011; Ye et al. 2012). This thesis provides evidence that ownership concentration has positive effects on levels of RPS manipulation, and that increased board independence can somewhat limit earnings inflation in RPSs.

Finally, Jian and Wong (2010) demonstrate that RPSs work as a substitute other than a complement to accruals-based manipulation. I extend their analysis by incorporating the effect of 2001 RPT regulations on the trade-offs between RPSs and discretionary

accruals. I document that the substitution effect between discretionary accruals and RPSs is only significant in the pre-regulation period. The results suggest that the 2001 RPT measurement regulation has significantly increased the cost of using RPSs to beat the regulatory thresholds.

The results have important policy implications for regulators in China. The results reveal that the 2001 RPT regulations were somewhat effective in reducing price manipulations for RPS but did not eliminate earnings inflation via RPSs. This might be because firms can still rely on sales volume inflation. The results also contribute to the debate on the costs and benefits of the profitability regulations. Regulators in China should be aware that the extent of RPS manipulation is significantly associated with the profitability regulations of new equity offerings and delisting.

1.5 Organisation of the Thesis

The rest of this thesis is organised in the following way. Chapter Two discusses the regulations, theoretical framework and prior empirical studies of RPTs. Chapter Three discuss prior earnings management studies conducted in China. Chapter Four outlines the research methodology. Chapter Five describes the sampling procedures, characteristics and descriptive statistics. Chapter Six presents the hypothesis testing. Finally, Chapter Seven provides a summary of the study findings and its contributions to the research. It also outlines suggestions for future research.

Chapter 2: Related Party Transactions in China

2.1 Introduction

Related party sales (RPSs) have been a primary means of earnings management in China (e.g. Aharony et al. 2010; Jian & Wong 2010; Lei & Song 2011; Noronha et al. 2010). The series of corporate scandals occurring in late 1990s and early 2000s involved a widespread use of inflated RPTs. To reduce earnings inflation through RPTs, the MOF promulgated the 2001 RPT measurement regulation. To better understand the reasons leading to the passage of this regulation, I first describe the institutional background prior to the effect of this regulation and how regulators in China. I next review the definitions and disclosure requirements of related parties and related party transactions in Section 2.3. Section 2.4 discusses prior theoretical and empirical studies concerned with the role of RPTs, and also develops the first hypothesis of this thesis. Section 2.5 provides a summary.

2.2 Institutional Background

In late 1978, China commenced economic reforms that introduced aspects of a capitalist economic system. To facilitate the process of economic liberalisation, China opened its own stock markets in Shanghai and Shenzhen in 1990. The establishment of stock exchanges was an experimental step to shift state-owned enterprise (SOE) financing from the government to the market. A typical former Chinese SOE was generally comprised of three components: profitable units, unprofitable units and not-for-profit units. Most listed companies in China were spun off from the profitable units of former

SOEs under the dedication of the central government through its initial public offering (IPO) quota system.[9] To keep the pace of privatisation and decentralisation under control, newly listed firms are required to remain part of the SOE group in the post-IPO period, with an unlisted parent firm holding the majority of total outstanding common shares. The partially privatised listed companies typically share some personnel, brand names and other assets with their parent in the post-IPO period (Aharony et al. 2010). This practice allows considerable opportunities for listed firms to engage in related transactions with their parent and other related parties.

Substantive anecdotal evidence in China suggests that the abuse of RPTs was associated with a number of highly publicised corporate failures in the late 1990s. These scandals resulted in a huge decline in investor confidence at that time, with much criticism regarding the lack of RPT transparency and the self-dealings of such transactions as masking financial performances. In particular, the scandal of *Qiong Minyuan* in 1996 led to a public discussion regarding the disclosure, governance and auditing of RPTs. According to the investigation by the CSRC, 94 per cent of *Qiong Minyuan*'s revenues were from inflated RPSs or fake RPSs. Prior to its collapse, *Qiong Minyuan*'s share price increased by 1,059 per cent during 1996, due to its abnormal increase in operating revenues. The case of *Qiong Minyuan* reflects the market's misunderstanding of the underlying implications of RPTs at that time. *Qiong Minyuan* collapsed in 1997, and the chairman was sentenced to three years in prison.[10]

[9] The IPO quota system was created by the central government in the early 1990s to ensure a stable market in the transitory period. The central government set a fixed quota for the value of shares to be issued. The annual quota is allocated through provincial and municipal governments to identify potential listing candidates and distribute the quota to these SOEs in their jurisdictions. Local bureaus usually first restructure local SOEs systems and grant the profitable units of large SOEs the privilege of going public. Each approval process for public listing and IPO involves a complicated administrative review process with an emphasis on the prospective profitability. The IPO quota system was formally abandoned in 2001.

[10] Retrieved from http://stock.hexun.com/2008/qmy30/index.html on 30 December 2012 (in Chinese).

As an additional anecdotal example of a highly publicised accounting fraud involving RPSs, *GuangXia Industry* manipulated both RPS transaction price and volumes to inflate earnings. There were around 784 million sales from 26 related parties that should have been consolidated, but were not, from 1999 to 2001. The gross margin of *GuangXia Industry* 2000 was 46 per cent, but only a few firms in the same industry report gross margins higher than 15 per cent. *GuangXia Industry* inflated earnings of 17.76 million in RMB in 1998, 177.81 million in 1999, 567.04 million in 2000 and 8.94 million of the first half of 2001 through RPTs. The auditing firm of *Zhong tianqin* was liquidated because of material audit deficiencies.[11] Other scandals of the late 1990s and early 2000s, such as *Green-Land Biological Technology* and *ZiXin Pharmaceutical Industrial*, used similar methods to *Qing Minyuan* and *GuangXia Industry* to inflate earnings. These scandals were highly publicised and eroded trust in financial reports.

Following these accounting scandals, regulators in China implemented accounting regulations aimed at reducing earnings manipulation through these transactions. On 21 December 2001, the MOF in China promulgated the *Provisional Regulation on the Accounting for Sales of Assets and Other Transactions between Related Parties*. The primary aim of this regulation is to reduce earnings inflation via income-*increasing* RPS of goods and services, assets and equities. The stated motivation of this regulation is as follows:

> In recent years, some listed firms obviously utilise unfair transactions with related parties to inflate earnings. Such transactions violate the fundamental accounting principles and are seriously against the *three-gong* principles of capital markets.[12]

[11] Retrieved from http://123.125.115.53/view/1320425.htm on 20 February 2014 (in Chinese).
Retrieved from http://www.people.com.cn/GB/jinji/35/159/20020526/737124.html on 20, February 2014 (in Chinese).
[12] The *three-gong* principles (*gong-ping*, *gong-zheng*, *gong-kai*) in Chinese refer to fairness, justice and transparency.

The 2001 RPT measurement regulation fundamentally changed the accounting treatment for RPTs by introducing a fair value measurement system.[13] This regulation states that revenues from RPTs can only be recognised using fair values. Any part over the fair value, defined as the *price differential* in this regulation, cannot be recognised as current earnings. Instead, the price differential is credited to a Capital-Surplus Price Differential of RPT account. This account is notionally a capital reserve account, but it cannot be used to increase reported capital or offset future losses.[14] However, a limitation of the 2001 RPT measurement regulation is that it applies only when the selling price of a product, service, asset or ownership sale is *more* than its fair value. Other potential earnings inflation techniques, such as RPP at lower prices, or sales volumes inflation are not considered. Additionally, this regulation does not mention the use of RPTs to understate earnings, although this is not the primary objective of this regulation.

In terms of sales of goods and provision of services, which is the primary interest of this study, this regulation requires that revenues from RPSs can only be recognised on their fair values. Any part over the fair value is required to increase the capital-surplus price differential of the RPT account, instead of current earnings.[15] The general methods to determine the fair value of a RPS have been clearly stated within the regulation. A listed firm could choose: the weighted average selling price to non-related parties as the base of fair selling price to calculate the fair value (fair price times sale volumes), if the non-RPSs count for a relatively large percentage of current sales (usually no less than 20%);

[13] The 2001 RPT measurement regulation has very limited effects in the 2001 annual reports because this regulation applies only to related party transactions traded after 21 December 2001. Firms are not required to make adjustments for any related party transactions traded before the effective date.

[14] The 2001 RPT measurement regulation is a transitory regulation, which lost effect in 2006. The newly issued accounting standards no longer requires listed firms to calculate the price differential required in the 2001 RPT measurement regulation. The previous price differential account is required to be credited to other capital surplus account.

[15] If the selling price of an asset is no more than the book value, the general revenue recognition principles identified in current accounting standard shall apply.

or 120 per cent of the cost of goods sold at a maximum as total revenue, if the non-RPSs count for a relatively small percentage of current sales (usually less than 20%), or sales are only traded among related parties. Alternatively, listed firms can use the weighted average historical price to value the total fair value if there is authentic evidence showing that the margin of gross profit to cost of goods sold is higher than 20 per cent; or the market price if there is a more objective and explicit price of the same product in the market.

Although the 2001 RPT measurement regulation proposed sweeping regulatory changes to restore the integrity of financial statements by curbing inflated RPTs, several issues remain unexamined. Specifically, it is unclear whether there really was a widespread use of unfair RPSs to inflate earnings in the period before the regulatory change, or whether these highly publicised scandals were just isolated instances of financial manipulation. It is also unclear whether the 2001 RPT measurement regulation successfully reduced earnings inflation in RPSs. Therefore, the prevalence and extent of earnings inflation via RPSs prior to and post the regulatory change is an important research topic. This thesis contributes to the existing literature by addressing this issue.

2.3 Accounting Standards of Related Party Transactions in China

This section reviews accounting standards in relation to the definition and disclosure requirements of RPTs. The purpose of this review is to understand the definitions and disclosure requirements of related parties and RPTs in China. In 1997, the MOF which sets accounting standards in China promulgated its first standard for RPTs: *Disclosure of Related Party Relationships and Transactions* (the '1997 RPT standard' hereafter). In 2006, the MOF issued the new accounting standard that made several modifications

regarding the definition and disclosure policies of related parties and RPTs. Appendix One compares and contrasts the definitions and disclosure requirements between these two accounting standards.

2.3.1 Definition of Related Parties and Related Party Transactions

According to the 1997 RPT standard, a related party relationship is constituted if one party has the ability to control the other party or exercise significant influence over the other party in making financial and operating decisions, or two parties are controlled by one party. In addition, the 2006 accounting standard further recognises parties as related if two parties (or more) are controlled, jointly controlled, or influenced by one party *directly* or *indirectly*.[16] More importantly, the 2006 accounting standard addressed the principle of *substance over form* in considering each possible related party relationship, requiring attention be directed to the substance of the related party relationship and not merely the legal form.

The 1997 and 2006 standards define related parties to include parent companies; subsidiaries; parent firms' other affiliates; joint ventures; associate companies; major investors and their immediate family members; key managers and their immediate family members; and other companies directly controlled by major investors, key managers or their immediate family members.[17] Enterprises are not regarded as related parties simply because they are all under state control.[18]

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[16] The definitions of control, Joint control and significant influence are clearly stated in the 1997 and 2006 standards. Control is the power to govern the financial and operating policies of an entity so as to obtain benefits from its activities. Joint control, sated in the 1997 RPT standard, is the contractually agreed sharing of control over an economic activity. The 2006 RPT standard states joint control existing *only* when investing parties that need to share the power of control in financial and operating decision unanimously. Significant influence is the power to participate in the financial and operating policy decisions of an entity, but is not control over those policies.

[17] There are also some exemptions including capital providers, public utility units, government departments and organs which have normal dealings; a single customer, supplier, franchiser, distributor or

The definition of RPT is essentially same in both the 1997 and 2006 standards. A RPT refers to an activity or event whereby a transfer of resources, labour services or obligations takes place between related parties, irrespective of whether momentary consideration is involved. The examples listed in these accounting standards refer to purchases or sales of goods; purchases or sales of assets other than goods; rendering or receiving services; guarantee; transfers under finance arrangements through loans or equity contributions; leasing; agency; transfer of research and development projects; license agreements; settlement of debts on behalf of an entity or by the entity on behalf of another party; and the emoluments for key managerial personnel.

2.3.2 Disclosure Requirements of Related Party Transactions

The 1997 RPT standard requires that, irrespective of whether there have been transactions between related parties, listed firms must disclose related party relationships in the footnote to the financial statements where control exists. At a minimum, disclosures shall include: the related party's name, place of registration, legal representative and registered capital; major operations of related parties; and the number of shareholdings and changes in the shareholdings. Further, the 2006 accounting standard requires listed firms to disclose the ultimate controlling shareholder if the parent company is not the ultimate controlling party.

The 1997 RPT standard requires that, where there have been transactions between an enterprise and its related parties, the reporting enterprise shall disclose the nature of

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agent with whom an enterprise transacts a significant volume of business by virtue only of the resulting economic dependence; and two venturers simply because they share joint control over a joint venture.

[18] This is because most listed firms in China are stated-owned. In contrary to this, the international accounting standard (IAS) treat these parties as related if they are controlled, or significantly influenced by the same government.

related party relationships, as well as types of transactions and elements of transactions in annotations. Elements necessary to understand the financial statements in the 1997 RPT standard must include: amounts of transactions or appropriate proportions; amounts or proportions of outstanding items; and pricing policies.[19] According to the 2006 accounting standard, two additional elements are required to be disclosed: details about the guarantees granted or obtained, and the amount of provisions for doubtful debts relating to the amount of outstanding balances. Neither of these two standards requires reporting firms to disclose transactions between enterprises that are eliminated during the consolidation. However, unconsolidated transactions must be disclosed.

2.4 Prior Studies of Related Party Transactions

Sections 2.2 and 2.3 reviewed accounting regulations and standards of RPTs in China. This section reviews prior theoretical and empirical studies concerned with the role of RPTs. I first discuss the nature of RPTs, from both the *efficient transactions* and the *conflicts of interest* perspectives in Section 2.4.1. In this subsection, I also review empirical studies concerned with the motivations behind RPTs: *tunnelling* and *propping*. I next discuss how RPTs are used to manage earnings, in particular, via *transfer pricing techniques*. I discuss the costs and benefits of using this tool in Section 2.4.2. Section 2.4.3 outlines the advantages and disadvantages of earnings management via RPSs. Finally, I develop the first hypothesis, based on the theoretical framework and existing evidence in Section 2.4.4. In the final section, I discuss the potential effect of the 2001 RPT measurement regulation on price inflation in RPSs.

[19] Based on my data collection, nearly all firms disclose the raw amounts of related party transactions. Only very few firms disclose the proportions alone without indicating amounts. For those firms who do not provide raw amount numbers, I reinstated proportions into amounts by multiplying the deflators (usually total sales) used.

2.4.1 Theoretical Perspectives of Related Party Transactions

Two competing theoretical views of RPTs are the 'efficient transactions' view and the 'conflicts of interest' view. The *efficient transactions view* emphasises that RPTs can satisfy the underlying economic needs of a company and minimise transaction costs between related parties. From the efficient transactions' perspective, RPTs represent a natural element business to not harm shareholders' interests. Thus, firms with high volumes of RPTs might not necessarily commit financial and accounting fraud (Gordon et al. 2004; Gordon & Henry 2007; Kohlbeck & Mayhew 2010; Henry et al. 2010). The *conflicts of interest* view of RPTs emphasises the potential conflict of interests raised by Jensen and Meckling (1976) and La Porta et al. (2000). Jensen and Meckling (1976) discuss potential conflicts of interest between a manager and shareholders that may result in the manager expropriating the firm's resources for personal gains. La Porta et al. (2000) discuss potential agency conflicts existing between controlling and minority shareholders.

From the efficient transactions view, RPTs represent a natural part of business and firms with high volumes of such transactions might not commit financial fraud (Gordon et al. 2004). In contrast, RPTs can also fulfil the underlying needs of a company, improve cooperation between related parties, allocate resources efficiently, reduce information asymmetries, minimise transactions costs and enhance contracting (Gordon et al. 2004; Gordon & Henry 2007; Kohlbeck & Mayhew 2010; Henry et al. 2012). Since related parties generally share the same expertise and skills, transactions between related parties might involve less information asymmetry, thereby reducing transaction costs (Kohlbeck & Mayhew 2010).

Gordon and Henry (2007) suggest that, if a non-executive director has the skills and knowledge of firm-specific activities, as well as an expertise that the company demands such as accounting, it would be more effective and efficient for the company to contract the related party to provide the service than an outsider who has the same expertise. Because the non-executive director possesses in-depth skills in the firm, information asymmetries are reduced and contracting is enhanced.

From a conflict of interest perspective, RPTs represent a potential for agency problems and conflict of interests. Prior studies demonstrate that RPTs can be used for *tunnelling* or *propping* purposes. *Tunnelling* refers to transfers of resources from firms usually to the controlling shareholders through various forms of transactions. *Propping* refers to transfers of resources from the controlling shareholders to the firm requiring assistance (Johnson et al. 2000). In firms with concentrated ownership, controlling shareholders are able to *tunnel* wealth from the controlled firm via various types of RPTs (Cheung et al. 2006; Berkman et al. 2009; Cheung et al. 2009a; Cheng et al. 2009b; Jiang et al. 2010; Peng et al. 2010; Lei & Song 2011), but can also use their private wealth or transfer resources from other controlled entities to *prop* up firms in distress or planning to issue new equity offerings (Cheung et al. 2009b; Aharony et al. 2010; Jian & Wong; 2010; Lo et al. 2010; Yeh et al. 2012). Previous propping and tunnelling studies concerned with RPTs are summarised in Appendix Two.

Tunnelling studies have examined different types of RPTs that can be used as proxies for expropriating resources from listed firms to their parents (e.g., Cheung et al. 2006; Berkman et al. 2009; Cheung et al. 2009a; Cheng et al. 2009b; Jiang et al. 2010; Peng et al. 2010; Lei & Song 2011). Cheung et al. (2006) examine asset sales, purchases, swaps, equity sales and joint ventures between firms listed in Hong Kong and their controlling

owners. They have found that firms announcing tunnelling transactions exhibit significant negative excess returns at the initial announcement and during the 12-month period after the announcement. Based on a sample of 254 related party and arms' length acquisitions and sales of assets in Hong Kong during 1998 to 2000, Cheung et al. (2009a) found that asset sales to related parties were conducted at unfavourable prices compared to similar arms' length deals. Meanwhile, asset purchases from related parties were carried out at a higher price than similar arms' length deals.

Some studies use related party loans and loan guarantees as proxies for tunnelling. Based on a sample of 88 Chinese listed firms issuing loan guarantees in 2009, Berkman et al. (2009) found that firm value and operating performances are lower for firms that issue related guarantees, compared to firms without such guarantees. Based on a sample of Chinese listed firms during 1996 to 2006, Jiang et al. (2010) found that loans made to related parties, typically reported as part of other receivables in the balance sheet of listed firms, represented a large portion of assets and market values. They demonstrated that firms having large other receivables balances had worse operating performances in the next year, and market participants did not seem to fully anticipate the consequences of tunnelling via corporate loans.

In contrast to tunnelling studies focusing on non-recurring items, propping studies tend to focus on examining RPSs. Using a sample of 185 IPO firms listed on the Shanghai Stock Exchange during 1999 to 2001, Aharony et al. (2010) found that RPSs of goods and services were used to prop up earnings in the period preceding IPOs. Jian and Wong (2010) provide evidence that listed firms propped up earnings via abnormal RPS to their controlling owners, to meet earnings targets of new equity offerings or listing requirements during 1998 to 2002. Yeh et al. (2012) examined a sample of firms listed

in Taiwan. Their results provide a partial support for the propping-up hypothesis that firms use RPSs to inflate earnings to influence the price of new seasoned equity and to avoid earnings decline.

Some studies combine propping incentives and tunnelling incentives. Friedman et al. (2003) suggest that controlling shareholders sometimes engage in propping transactions because such actions are needed to sustain long-term tunnelling. In their framework, controlling shareholders can choose to prop up their firms, for example, when firms are in distress which may allow them to tunnel more in the future. Based on the framework of Friedman et al. (2003), Cheung et al. (2009b) examined a sample of 292 non-recurring RPTs between listed firms in China and their controlling shareholders from 2001 to 2002 and they found more instances of tunnelling than propping. Peng et al. (2010) provided evidence that the use of tunnelling or propping depends on the listed firm's financial situation. Aharony et al (2010) found the extent of earnings management via RPSs in the pre-IPO period was associated with the level of post-IPO tunnelling via non-payment of corporate loans.

2.4.2 Transfer Pricing Through Related Party Transactions

As discussed in Section 2.4.1, previous studies have concluded that RPTs could be used for propping or tunnelling purposes (Cheung et al. 2006; Berkman et al. 2009; Cheung et al. 2009a; Cheung et al. 2009b; Aharony et al. 2010; Jian & Wong 2010; Jiang et al. 2010; Lo et al. 2010; Peng et al. 2010; Lei & Song 2011; Yeh et al. 2012). Although many studies acknowledged that RPTs can be used for propping and tunnelling, they did not empirically examine how RPTs were managed to transfer corporate resources and manipulate reported earnings which will be addressed in this section.

Transfer pricing through RPTs plays a central role in tunnelling and propping activities. Because the accounting recognition of a transfer of resources is normally based on the price agreed between transacting parties, related parties can set prices that are not equivalent to transactions between unrelated parties. With regard to tunnelling, sales of assets, ownership or products to a related party at the below-fair-price can transfer wealth from the firm to related parties. Similarly, purchases of assets, ownership or products from a related party at the above-fair-price can also transfer wealth from the firm to related parties. Such transactions understate earnings, particularly when controlling shareholders intend to expropriate minority shareholders' interests (e.g., Cheung et al. 2006; Berkman et al. 2009; Cheung et al. 2009a; Cheng et al. 2009b; Jiang et al. 2010; Peng et al. 2010; Lei & Song 2011). The opposite of above transactions, like sales to a related party priced at more than the fair value, or purchases from a related party priced at less than the fair value would overstate earnings, transferring wealth from related parties to the listed firm. This can be used by firms to beat various earnings benchmarks (e.g., Lo et al. 2010; Yeh et al. 2012).

Transfer pricing via RPTs could very efficiently manipulate earnings. Firms just simply distort the transaction price with related parties. In contrast to accruals-based manipulations that shift earnings between periods for the entity concerned (e.g., Dechow 1994; Sloan 1996; Teoh et al. 1998), transfer pricing manipulations shift earnings between related parties during a single accounting period. Different with discretionary accruals that result in accrual reversions in future periods, transfer pricing via RPTs can permit managers to manipulate earnings permanently. Absent additional earnings management (earnings in the next period) are equal to actual earnings rather

than earnings less the cost of earnings management in the prior period like discretionary accruals, greatly reducing the cost of this earnings management tool.

However, there are also costs of using transfer pricing between related parties. First, transfer pricing via RPTs can significantly change the bottom-line earnings that will draw the scrutiny of regulators. Regulators and accounting standard setters, in particular, are concerned about RPTs traded above or below the fair price to manage earnings. To address the concerns about RPTs not occurring at arm's length, standard setters usually highlight the potential for RPTs to be carried out under more favourable or unfavourable terms than those available to unrelated third parties in the setting of accounting standards. For example, the *Internal Accounting Standards* (2009) states:

> A related party relationship could have an effect on the profit or loss and financial position of an entity. Related parties may enter into transactions that unrelated parties would not. For example, an entity that sells goods to its parent at cost might not sell on those terms to another customer. Also, transactions between related parties may not be made at the same amounts as between unrelated parties.

Similarly, the newly issued Chinese accounting standards in 2006 state that, if an entity makes disclosures that a RPT is carried out at arm's length, such representations must be substantiated. The Chinese regulators' concern about RPTs clearly focuses on the non-arms-length nature of the transactions. For example, as discussed in Section 2.2, Chinese regulators issued the 2001 RPT measurement regulation, attempting to restore the fair value of RPTs and reduce earnings inflation. This regulation outlines the principles and rules for auditors to compute the fair value of RPTs, increasing the scrutiny of transfer pricing via RPTs.

Second, although transfer pricing through RPTs might not immediately affect the next period's earnings, earnings reversion can incur in the future and the reversion can be

even more severe than accrual manipulation. This is because if a firm inflates RPSs (or other types of RPTs) to its parent at an earlier time, it increases reported earnings and the accounts receivables (or other receivables) in its balance sheet. If the related party is not able to pay their debts in time or even refuses to pay, the possibility of write-offs of these receivables significantly increases in the future. Tan (2004) found that nearly 70 per cent of listed firms in China who reported two consecutive years of losses had receivables unpaid by related parties. The related party that fails to pay their debts was a major reason for the operational failure of 15 delisted companies.[20]

2.4.3 Earnings Management Through Related Party Sales

Previous subsection discusses the benefits and costs of transfer pricing techniques in RPTs. In this subsection I specifically focus on the discussion of earnings management through related party sales (RPSs). Because the 2001 RPT measurement regulation is mainly designed to reduce the inflated RPTs and the primary objective of this research is to investigate the effect of this regulation, the following discussions are mainly aligned with the propping side of RPSs.

Unlike non-recurring items focusing primarily on the use of transfer pricing techniques, RPSs can be manipulated from *price*, *volumes* or a *combination* of *price* and *volumes*. The manipulation of RPS volumes is feasible because the high frequency and volumes of these transactions allows the firm to inflate earnings simply by over production and selling current period RPSs, or shifting the next period's RPSs to the current period

[20] As anecdotal evidence, the HanQi that is the ultimate controlling shareholder of FengHua have accumulated debts equalling 198.6 million RMB from FengHua until 2002. In 2004, 52.2 million receivables had to be written off because of the HanQi's bankrupcy. FengHua was subsequently treated as special treatment firms (Jiang et al. 2010). Similarly, the parent firm of Monkey King was sued in 2000 because it failed to pay outstanding loans totalling 890 million RMB owned by Monkey King (Berkman et al. 2009).

(Jian and Wong 2010). Sales volumes manipulation is supposed to bear a lower risk of detection, because the manipulation of volumes is not a violation of regulations. However, transfer pricing is less costly than inflating volumes as price inflation does not require unnecessary production and transfer costs.

Prior empirical evidence supports the viability of propping through RPSs. Khanna and Yafeh (2005) show that RPSs are the most frequent type of RPTs for propping. Aharony et al. (2010) found that firms used RPSs to control shareholders in the period prior to IPO. Jian and Wong (2010) support the use of RPS volumes inflation to prop up earnings and meet the thresholds of new equity offerings and delisting. Also, as illustrated in Section 2.2, many financial scandals of late 1990s and early 2000s in China were associated with price inflation in RPSs, a combination of price and volumes inflation or even fake RPSs.

Following Khanna and Yafeh (2005), Aharony et al. (2010) and Jian and Wong (2010), this thesis focuses on earnings management using RPSs. There are several reasons for this approach. First, as discussed in Section 2.4.2, unlike discretionary accruals that borrow earnings from the next period, and suffer future earnings reversion, price inflation in RPSs can permit firms to inflate earnings permanently. In China, the major earnings incentive is to meet the regulatory thresholds of new equity offerings and delisting (Chen & Yuan, 2004; Haw et al. 2005; Yu et al. 2006; Chen et al. 2008). As the CSRC uses the three-year ROE as the base for qualification of share issuance, manipulating accruals is less likely to provide the sustained inflated earnings needed for the objective to beat the regulatory benchmarks. Because the price manipulation with related parties does not need to sacrifice the listed firms' future earnings, managers can better handle major earnings targets, such as the ROE for three years. Jian and Wong

(2010) demonstrate that listed firms are less likely to use discretionary accruals to beat the regulatory thresholds of new equity offerings and delisting when they have opportunities to inflate sales volumes.

Second, compared with other infrequent RPTs, RPSs are highly recurring and persistent. In the period prior to the effect of the 2001 RPT measurement regulation, it was very difficult for regulators and auditors to determine whether RPSs were part of normal business or were manipulated for various targets. I note that firms could use other types of RPTs such as asset transfers as an alternative way to achieve propping, but such transactions were much more infrequent and more easily detected. Although previous literature based on data prior to 2001 shows that non-recurring items were widely used to beat the regulatory thresholds of new equity offerings and delisting in China (Chen & Yuan 2004; Haw et al. 2005; Yu et al. 2006), the CSRC had limited the use of non-recurring items to inflate earnings since 2001. The 2001 profitability regulation of new equity offerings and delisting required companies applying to make new equity offerings to report two ROE measures: one based on bottom-line earnings, and the other based on core earnings (excluding non-recurring items). The lower of the two measures was used as the test for qualifying equity offerings and identifying potential delisting firms.

Third, compared with RPPs, RPSs have a full effect on earnings. The effect of RPPs on goods sold may be partial, depending on the inventory cost flow assumptions, as well as they provide a more timely and efficient way to inflate earnings (Jian & Wong 2010). The empirical results of Aharony et al. (2010) and Jian and Wong (2010) do not to support RPSs for propping. However, I include RPPs in the robustness checks.

2.4.4 Hypothesis One

Section 2.4.3 discusses how RPSs are used to inflate earnings and the associated cost and benefits of this earnings management tool. This subsection discusses the prevalence of price inflation in RPSs in the period before and after the 2001 RPT measurement regulation. The investigation is very important. First, though there are many accounting frauds that shed the light on RPSs widely used to prop up earnings in China, there is lack of empirical evidence regarding whether income-increasing RPSs are associated with price inflation. Second, this study extends the propping literature concerned with RPSs (e.g., Aharony et al. 2010; Jian & Wong 2010) by examining the effectiveness of the 2001 RPT regulations in restricting earnings management activities.

To evaluate the prevalence of price inflation in RPSs, this thesis examines whether income-increasing RPSs are associated with the change in gross margin. I define the positive change in income-increasing RPSs between accounting periods as the proxy for income-increasing RPSs. Because I cannot identify the exact transaction price and gross margin for RPSs, I use the change in the average gross margin from both related and unrelated parties as the proxy for price manipulation.[21] I argue that, if there is no price inflation via RPSs, then the positive change in RPSs should only capture volumes inflation. Consequently, the positive change in RPSs and the change in gross margin are two clearly distinct concepts, because the positive change in RPSs refers to volumes inflation, while the change in gross margin refers only to price inflation (assuming that cost margin is relatively constant). There would then be no relationship between income-increasing RPSs and the change in gross margin. However, if listed firms inflate

[21] The use of average gross margin to capture price inflation requires the adequate control for other factors which will be discussed in Chapter Four in detail.

the transaction price to some extent, the income-increasing RPSs will be positively associated with the change gross margin.

Built on previous studies concerned with propping or transfer pricing techniques through RPSs (Cheung et al. 2009b; Aharony et al. 2010; Jian & Wong; 2010; Lo et al. 2010; Yeh et al. 2012), I hypothesise that firms inflate the transaction price of RPSs in China, and expect a positive association between the change in gross margin and income-increasing RPSs, leading to H1 (stated in the alternative form):

H1: There is a positive association between the change in gross margin and income-increasing RPSs.

To reduce price inflation in RPTs, the 2001 RPT measurement regulation requires the part priced over fair value to be excluded from current earnings. This regulation has significantly increased the cost of price inflation in RPSs. Consequently, it is important to examine whether there is a difference in the prevalence of price inflation in RPSs prior and post the effect of the 2001 RPT measurement regulation. Linking with anecdotal evidence showing a widespread price inflation of RPSs in the period before 2002, I predict that firms used price inflation in RPSs prior to the effect of the 2001 RPT measurement regulation. If the 2001 RPT measurement regulation was effective in reducing price inflation, or firms just simply engaged in RPS volumes inflation in the period after the regulatory change, then there would be no association between the change in gross margin and income-increasing RPSs in the period after the regulation change. This leads to the following hypotheses:

H1(a): There is a positive association between the change in gross margin and income-increasing RPS prior to the effect of the 2001 RPT measurement regulation.

H1(b): There is no significant association between the change in gross margin and income-increasing RPS post to the effect of the 2001 RPT measurement regulation.

2.5 Chapter Summary

To summarise, Section 2.2 of this chapter reviewed the institutional background of RPTs in China. As most listed firms in China were carved from their parent SEOs, newly listed subsidiaries had considerable room to engage in RPTs with their parent SOEs. Many accounting frauds in late 1990s China involved RPTs, creating concerns among regulators and other market participants about appropriate governance and disclosure of these transactions. To address public concerns over earnings management via RPTs, the MOF subsequently implemented regulations aimed at reducing earnings inflation through RPTs in 2001. Section 2.3 reviewed definitions and disclosure requirements of related parties and RPTs, and the theoretical framework and empirical studies concerned with the motivations for the use of RPTs: tunnelling and propping. Linking with the existing theoretical and empirical literature, I developed the first hypothesis relating to whether listed firms inflated the transaction price of RPSs, and whether the 2001 RPT measurement regulation effectively reduced price inflation in RPSs.

Chapter 3: Earnings Management Incentives in China

3.1 Introduction

Chapter Two reviewed the role of RPTs in earnings management. In Chapter Three, I review previous earnings management studies and link the use of RPSs with earnings management incentives. I first summarise general earnings management incentives and tools studies in the western world. The purpose of reviewing these studies is to compare earnings management incentives and tools in the setting of the western world with those in China. Next, I review prior earnings management studies in China and summarise the major earnings management motivations in China. Finally, building on previous empirical evidence, I develop the second hypothesis in this chapter.

3.2 Earnings Management Studies in Other Countries

Earnings, sometimes called net profits, net income or bottom-line, are viewed as the most important component of financial statements. Given the importance of earnings, it is not surprising that firms manipulate earnings to achieve various targets. Earnings management has been the subject of considerable academic research in the United States of America (USA) and other developed markets. Research on earnings management suggests this is a pervasive phenomenon (e.g., Healy & Wahlen 1999; McNichols 2000, 2002; Dechow & Skinner 2000; Rowchowdhury 2006).[22] Healy and Wahlen (1999, p. 368) state:

[22] Although earnings management raises public concerns about the reporting credibility, the general view of earnings management is that it is a reasonable and legal reporting technique within GAAP.

> Earnings management occurs when managers use judgment in financial reporting and in structuring transactions to alter financial reports to either mislead some stakeholders about the underlying performance of the company or to influence contractual outcomes that depend on reported accounting numbers.

In this section, I focus on two earnings management incentives that have been well examined in previous empirical studies, to gain a favourable market valuation (e.g., Rangan 1998; Teoh et al. 1998) and to influence contracts in terms of accounting numbers (DeAngelo 1988; Dechow & Sloan 1991; DeFond & Jianbalvo 1994; Sweeney 1994).

With regard to capital market motivations, previous authors have examined earnings management behaviours during periods when capital market incentives to manage earnings were likely to be high; in particular, the periods surrounding important market events. Event-typed studies have documented that firms manage earnings upward in anticipation of capital raising events, such as IPOs or SEOs, and post-event stock returns and earnings performance are negatively associated with the magnitude of pre-event earnings management activities (Rangan 1998; Teoh et al. 1998; Shivakumar 2000; Cohen & Zarowin 2010). Other studies of earnings management for capital market incentives have examined earnings management behaviours when there is a gap between firm performance and market expectations. These studies have concluded that failure to meet analysts' expectations will result in poor stock price performance; earnings are usually manipulated upwards to be higher than analysts' expectations (Kasznik 1999).

With regard to contracting motivations, a number of studies have examined whether earnings management can be explained by incentives created by lending and compensation contracts. DeFond and Jianbalvo (1994) found that managers inflate

earnings one year prior to potential lending covenant violations. Their results suggest that firms close to lending covenants manipulate earnings to mitigate the covenant violation. But the empirical evidence is mixed. Sweeney (1994) suggests that firms manipulate earnings typically after the covenant violation. In contrast to DeFond and Jianbalvo (1994), his results indicate that earnings are more likely to be managed to reduce the future covenant violation. Other studies have examined whether earnings management is affected by incentives created by managerial compensation contracts (DeAngelo 1988; Dechow & Sloan 1991). These studies, based on the agency theory developed by Jensen and Meckling (1976), have concluded that compensation contracts induce at least some firms to inflate earnings to increase bonus awards.

Accruals manipulation has been the primary focus of the earnings management literature in the western world. Evidence of managers engaging in accrual manipulation has been discussed and explored in many contexts, for many accruals, and in response to many managerial incentives (e.g., Healy 1985; Jones 1991; Rangan 1998; Teoh et al. 1998; Healy & Wahlen 1999; McNichols 2000, 2002; Dechow & Skinner 2000). Some accruals manipulation techniques (e.g., the premature recognition of revenues or deceleration of expenses) go beyond the requirements of generally accepted accounting principles (GAAP). These techniques, sometimes named as *cooking books techniques*, are considered illegal earnings management techniques, and a violation of GAAP. Aggressive reporting might involve accounting fraud that brings litigation risk to the firm and employment risk to the manager. In addition to the cost of detection and potential litigation risk, accruals manipulation results in future earnings reduction (e.g., Dechow 1994; Sloan 1996; Teoh et al. 1998).

Different to accruals manipulation, real earnings management focuses on the manipulation of real economic variables, such as reducing discretionary expenditures or providing price discounts to inflate earnings. Roychowdhury (2006) defines real earnings management as a technique that departs from normal operational practices. Unlike accruals manipulation, real earnings management studies conclude this tool has cash flow consequences. Moreover, real earnings management is supposed to have a lower cost of detection than accruals manipulation, as the manipulation of real activities is not a GAAP violation.

3.3 Earnings Management Studies in China

Previous section summarises earnings management incentives and tools in the western world. As discussed, studies based on the USA, or other developed markets, have provided evidence that managers could manipulate earnings through accounting accruals or real economic transactions. These studies have empirically tested earnings management behaviours in many contexts, such as influencing stock prices or contractual outcomes. Nonetheless, inferences developed from the western literature do not necessarily apply to the Chinese market. This is because there is a huge difference in corporate ownership structures and market regulations between China and western countries. The principal-agent problems considered by the Jensen and Meckling (1976) are less significant in China because the ownership is concentrated and the information asymmetry between controlling shareholders and managers is low. La Porta et al (2000) suggest the primary agency conflict in East Asia where firms have concentrated ownership is that controlling shareholders take advantage of control to expropriate resources from minority shareholders.

Noting a point made earlier, most listed Chinese firms are former SOEs restructured by local governments. Unlike privatisation in other institutions where governments sell ownership to the public, the Chinese government holds the majority of common shares in SOEs. As a controlling shareholder, the government holds the power to nominate representatives to sit on the board and sometimes directly appoints senior managers such as the chair and chief executive officer (CEO) in their controlled SOEs. As Chinese managers in listed SOEs are not permitted to own shares in the firm and have no stock options, they do not gain benefits from a high stock price. Thus, they may not have the same incentive to manipulate earnings as their counterparts in western companies (Aharoney et al. 2010). In this section, I discuss the earnings management incentives and tools in China.

3.3.1 Regulations and Earnings Management Incentives

A number of empirical studies conclude that the main earnings management incentive is to meet or beat the profitability requirements for share issuance or to avoid delisting (e.g., Yu et al. 2006; Chen & Wang 2007; Jiang & Wang 2008). To be permitted to make a public equity offer, listed firms usually have to achieve the required benchmark rate for reported ROE each financial year of the three years prior to the application of new equity offerings (the benchmark rates have varied from 6 to 10% in different years). To maintain the listing status, listed firms have to avoid three consecutive years of losses.

There are two primary sources for Chinese listed firms to increase equity capital after going public: rights issue and seasoned equity offerings (Chen & Yuan 2004).[23] Firms planning to issue new equities need to submit an application first to the CSRC and the application outcomes are subject to CSRC review. As noted in Section 2.2, China employed a restrictive IPO quota system to assign fixed shares to listing candidates nominated by local governments in the 1990s. Since the competition for limited IPO quota has been very intense, local governments usually distribute their shares to as many firms as possible. Consequently, the quota allocated to each firm is not enough to satisfy its capital needs. Due to the lack of other means for listed companies to raise capital and the huge demand from stocks, rights offerings were excessively used by listed companies to raise capital (Chen & Yuan 2004). To curb the excessive issuing activity and ensure that financially well-performing firms are selected for issuing, the CSRC implemented a series of guidelines governing new equity offerings in 1993. Each guideline imposed a minimum level of profitability requirements.

As summarised in Appendix Three, these restrictions were gradually tightened from 1993 to 1999, but lessened after 1999. In 1993, listed firms with two previous successive years' profits were eligible to apply for a rights issue offering. The threshold became more stringent in 1994, when listed firms were required to have three consecutive years' positive earnings and a minimum average ROE of 10 per cent over the prior three years. The regulation was further tightened in 1996, requiring an equity offering candidate have ROE above 10 per cent of the last three successive years. In 1999, the profitability requirements for rights issuers was modified to a minimum average ROE of 10 per cent over the past three years and not less than 6 per cent in any of these years. From 2002, the profitability requirements have focused on the average

[23] Rights issue focuses on the offer to existing shareholders at a discount, where SEO is directly open to the public without a discount. SEO is not allowed until 2001. Right issue is an experimental step for the following SEO (Chen et al. 2008).

ROE instead of imposing specific requirements for each individual year. The threshold was modified to a minimum three-year average ROE of 10 per cent from 2002 to 2005, and then further softened to three years of positive earnings for 2006 to 2014.

The profitability threshold for new seasoned equity offerings (SEO) and delisting is defined in an identical manner to that of rights issues. SEOs are not allowed until 2001. The profitability threshold was an average ROE of 6 per cent over the previous three years. The regulation was modified in 2002, stating that SEO applicants must have achieved at least an average ROE of 10 per cent in previous three years, and a minimum ten per cent ROE in the years prior to application. This regulation was lessened in 2006 to only requiring a three-year average ROE of 6 per cent being required for eligible SEO applicants.

No regulation was issued on delisting until 1998, when the CSRC introduced the special treatment (ST) and particular transfer (PT) policies. The ST regulation states that listed firms with two successive years of losses, or with an asset value per share less than the face value of the stock, would be identified as ST firms. Those firms with three consecutive losses are treated as PT firms, which would face delisting from the stock market.

Prior literature suggests that these profitability regulations have resulted in an excess use of non-recurring items, to beat the regulatory thresholds (e.g., Chen & Yuan, 2004; Haw et al. 2005; Yu et al. 2006; Chen et al. 2008).[24] To address public concerns over the use of non-recurring items to beat regulatory thresholds for share issuance and

[24] Since 1998, the CSRC have used the ST and PT policies for delisting firms. The ST regulation states that listed firms with two successive years of losses or with an asset value per share less than the face value of the stock will be identified as ST firms. Those firms with three consecutive losses are treated as PT firms and face the delisting thread.

delisting, the CSRC modified its profitability requirements in 2001. The 2001 revised profitability regulation requires companies applying to make new equity offerings and delisting to report two ROE measures: one based on bottom-line earnings and the other based on core earnings, excluding non-recurring items. The lower of the two measures is used as the test for qualifying equity offerings. The CSRC also addressed the fair value measurement of RPTs in the revised profitability requirements for new equity offerings. To be eligible for a share issuance and maintain listing status, a listed firm must maintain their reported ROE as well as core ROE higher than the minimum regulatory threshold.

Six items were initially stated as non-recurring items in 2001: profits (or losses) from unfair RPT; disposal of subsidiaries and equity sales; gains (or losses) from asset swaps; tax returns and government subsidy; and other items recognised by the CSRC. This regulation was slightly modified in 2004, and increased to 14 items. The latest version of this regulation was issued in 2008, with twenty-one items, which have addressed the earnings management techniques that have emerged since 2004, such as: profits (or losses) from the disposal of fixed assets; asset or debt restructuring; asset impairment; reversals for provisions; changes in accounting methods; any non-operating items; trusteeships; and the use of financial derivatives. RPTs priced above fair value are classified as non-recurring items for the purpose of this regulation, and are thus excluded from the calculation of core ROE. [25]

[25] As this regulation was implemented before the 2001 RPT measurement regulation, there were some regulatory conflicts with respect to the accounting treatment for RPTs. The CSRC recognised the part over fair value as one of non-recurring items while the MOF recognised that as capital reserve. To harmonise these two regulations, the MOF informed the CSRC to use the accounting treatment stated in the 2001 RPT regulation to compute the fair value for RPTs on 27 December 2001.

3.3.2 Prior Earnings Management Studies and Hypothesis Two

The profitability regulations of share issuance and delisting in China have resulted in a cluster of firms that report ROEs just higher than the minimum regulatory threshold (e.g., Yu et al., 2006; Chen & Wang, 2007; Jiang & Wang 2008). For example, Yu et al. (2006), based on the truncated normal distribution method, noted the frequencies of Chinese listed firms' ROEs in the actual distribution were significantly higher than the expected distribution at intervals just above regulatory hurdles of equity offerings and delisting. They also found that the pattern of Chinese firms' ROEs change with profitability regulations.[26]

Previous earnings management literature in China focused mainly on the use of non-operating items to beat regulatory benchmarks. These studies have concluded that earnings management arises particularly when a firm's true financial performance is close to but less than the profitability threshold of share issuances or delisting (Chen & Yuan 2004; Haw et al. 2005; Yu et al. 2006; Chen et al. 2008). Chen and Yuan (2004) was the first study to conduct such research. Based on a sample of listed firms during 1996 to 1998, their study shows that firms whose operating ROE (ROE excluding profits and losses from non-operating items) was less than the regulatory threshold of rights issue, had higher industry-median adjusted profits from below-the-line items and investment sales than those firms whose operating ROE was greater than the regulatory threshold.

[26] For example, when the regulation sets 10% as the minimum threshold for new equity offerings, a great number of firms' ROE is concentrated within the interval 10%–12%; the concentration moves to 6%–8% when the minimum requirements changes to 6%. Yu et al. (2006) suggest that listed firms changed their behaviour in response to changes in regulatory requirements.

Consistent with Chen and Yuan (2004), Haw et al. (2005) also use the profits from below-the-line items to indicate earnings management. Based on a sample of Chinese listed firms from 1996 to 1998, their results support the major findings of Chen and Yuan (2004) that Chinese listed firms use below-the-line items to inflate reported ROE higher than the regulatory hurdle. Chen et al. (2008) examined a typical non-operating item to inflate earnings: the government subsidy. Their research showed that local governments in China grant the subsidy to listed firms when their reported ROEs are close to but lower than the minimum regulatory threshold.

To summarise, previous literature suggest that non-recurring or below-the-line items are commonly employed by listed firms in China to beat regulatory hurdles. Nevertheless, all these studies are based on a sample prior to 2001, and their results are not affected by recent regulatory changes also requiring that core ROE exclude excess profits from non-recurring items. Since 2001, regulatory changes have been aimed at reducing the likelihood of using excessive non-recurring items to gain share issuance approval.[27]

As discussed in Chapter Two, RPTs have been considered one of the most commonly employed earnings management techniques in China (e.g., Noronha et al. 2010). The survey-based research conducted by Noronha et al. (2010) documents that managers and accountants in China rank RPT as the most frequently used earnings management technique.[28] Although there is much anecdotal evidence associated with the abuse of RPSs, only a few academic studies empirically examine this issue. Aharony et al. (2010) examined earnings management behaviours through RPSs in the Chinese IPO setting.

[27] A non-recurring item is a gain or loss found on a company's income statement that is not expected to occur regularly. The portion of an organisation's income or loss that is derived from activities not related to its core operations.

[28] In fact, earnings management through RPTs partially overlap with the use of non-recurring items. For example, the asset or equity sales at distorted prices should be more easily traded with the parent or other related parties.

Despite a relatively small sample, is comprised of 185 IPO firms listed on the Shanghai Stock Exchange during 1999 to 2001, their results are consistent with the prediction that RPS of goods and services were used to inflate earnings in the pre-IPO period. Jian and Wong (2010) provided empirical evidence that listed firms propped up earnings via abnormal RPS to their controlling owners in a sample of Chinese listed firms from 1998 to 2000.

Following previous earnings management literature in China (e.g., Chen & Yuan 2004; Haw et al. 2005; Yu et al. 2006; Chen et al. 2008; Jian & Wong 2010), I hypothesise that listed firms use RPS to inflate earnings to meet or beat regulatory thresholds for issuing new shares or to avoid delisting. If so, there should be an association between the level of RPS manipulation and earnings management incentive variables. I focus on two extensively studied earnings benchmarks: first, meeting the regulatory thresholds of new equity offerings; and second, avoiding ST and delisting policies. Specifically, I define SUSPECT firms as those that satisfy the regulatory thresholds of new equity offerings, but do not satisfy them without manipulated RPSs and associated cost of goods sold. I define ST firms as those whose earnings are positive but negative after excluding manipulated RPSs and associated cost of goods sold. Thus, I compare the level of RPS manipulation of suspected earnings management firms to those of certain non-suspect firms. The second hypothesis (H2a) stated in the alternative form is:

H2a: There is greater use of RPSs for firms that satisfy the regulatory thresholds of new equity offerings and delisting but do not satisfy these thresholds without RPS management, compared to other firms.

As presented and discussed previously, the 2001 RPT measurement regulation limited income-increasing RPS. I argue that if these regulations were fully effective after the

passage of 2001 RPT regulations, there should be no association between earnings management via RPS and firms with incentives to meet or beat the regulatory thresholds of new equity offerings and delisting in the post-regulatory regime, leading to a rejection of H2a in this regulatory regime. If regulations cannot be fully effective in eliminating earnings inflation, but somewhat reduce RPSs, I expect at least a reduction in the extent of RPSs for firms with incentives to inflate earnings after the 2001 RPT measurement regulation when compared to similar firms before the effect of this regulation. This leads to H2b, stated in the alternative form:

H2b: There is less use of RPS for firms that have incentives to inflate earnings after the effect of the 2001 RPT measurement regulation, compared to those before the 2001 RPT measurement regulation.

3.4 Chapter Summary

This chapter reviewed major earnings management studies conducted in western countries and China. Studies in western countries examined two types of earnings management tools: accruals manipulation and real earnings management to inflate the stock price or to fulfil contracts written in terms of accounting numbers. However, studies in China have focused more on the use of real non-recurring transactions. The primary earnings management incentive is to meet or beat the regulatory thresholds of new equity offerings, or avoid delisting. In this chapter, I developed two hypotheses: the first relates to the prevalence of RPSs to meet or beat the ROE benchmarks of new equity offerings and delisting; and the second relates to the effectiveness in reducing the extent of earnings management for firms with incentives to inflate earnings to beat the ROE benchmarks of new equity offerings and delisting.

Chapter 4: Research Design

4.1 Introduction

In this chapter, I document the research method used to test the hypotheses, and explain the test variables, control variables, and their operation. First, I discuss the measurement of earnings management proxies. Second, I present the empirical models to test the hypotheses:

H1: There is a positive association between the change in gross margin and income-increasing RPSs.

H1a: There is a positive association between the change in gross margin and income-increasing RPS prior to the effect of the 2001 RPT measurement regulation.

H1b: There is no significant association between the change in gross margin and income-increasing RPS post the effect of the 2001 RPT measurement regulation.

H2a: There is greater use of RPS for firms that satisfy the regulatory thresholds of new equity offerings and delisting, but do not satisfy these thresholds without RPS management, compared to other firms.

H2b: There is less use of RPS for firms that have incentives to inflate earnings after the effect of the 2001 RPT measurement regulation, compared to those before the 2001 RPT measurement regulation.

4.2 Measuring Earnings Management

To proxy for earnings management using RPS, Aharony et al. (2010) use the change in ratio of RPS to total assets. Jian and Wong (2010) adopt a different approach. They identify abnormal RPS as the residual from a cross-sectional regression of RPS on leverage, assets and market-to-book ratio and industry dummies. Following Aharony et al. (2010), I model the change measure of earnings management via RPS. In calculating this proxy, I assume that the level of RPS for a firm is proportional to its sales in year 't'. I model RPS as:

$$RPS_t = \alpha SALE_t$$

Where $\alpha = RPS_t/SALE_t$. $SALE_t$ is the total sales revenue. I argue that a relatively stable ratio of RPS to sales should be observed if there is no earnings management. Any fluctuation in RPS captures earnings management to some extent. However, there would be less fluctuation in RPSs if the proportion of RPSs to total sales revenues is consistently high for each year. To address potential earnings management activities in firms that have high RPSs for each year, I next model the cross-sectional proxy which is based on the industry-mean adjusted model in a common three-digit CSRC code. For each physical year, I calculate the mean level of the ratio of RPSs to sales ($RPS_t/SALE_t$), excluding the own observation for which I calculate the measure. The deviation from the industry mean is used as the proxy for industry-mean adjusted RPSs, referred to as excess RPS ($ERPS_t$). The change measure (ΔRPS_t) and cross-sectional measure ($ERPS_t$) of RPSs are stated as the Equation (1a) and (1b):

$$\Delta RPS_t = \frac{RPS_t}{SALE_t} - \frac{RPS_{t-1}}{SALE_{t-1}} \quad (1a)$$

$$ERPS_t = \frac{RPS_t}{SALE_t} - mean\left(\frac{RPS_t}{SALE_t}\right) \quad (1b)$$

Where, RPS_t is the RPS in the current year; $SALE_t$ donates the total sales revenue in the current year; ΔRPS_t is the change in RPS, using Equation (1a). $ERPS_t$ is the industry-mean adjusted RPSs, using Equation (1b).

These models differ from Aharony et al. (2010) and Jian and Wong (2010) in three ways. First, Aharony et al. (2010) use assets as the main deflator, and Jian and Wong (2010) use owner's equity as the deflator in their tests, respectively. I deflate RPSs by total sales revenues, as the measure allows me to focus on the analysis of the proportion and the change in the proportion of RPS to total sales revenues. Second, the measure of earnings management via RPSs in Aharony et al. (2010) and Jian and Wong (2010) did not address that RPSs could be manipulated either from sales prices or volumes. Jian and Wong (2010) base their empirical analyses on the assumption that the residual term use in their study captures sales volumes manipulation only. However, Jian and Wong (2010) do not explain why the residual captures volumes manipulation instead of a joint effect of price and volumes inflation.[29] Therefore, the analysis of Jian and Wong (2010) focuses on one side of manipulation that does not provide a full picture of the nature of earnings inflation via RPS. The measure used in this study does not make such an assumption. The measures of ΔRPS_t or $ERPS_t$ in this study refer to the jointed effect of price and volume manipulation of RPSs.

Moreover, the pattern of RPS manipulation studies in Jian and Wong (2010) is quite similar to accruals manipulation. For example, Jian and Wong (2010) argue that the high frequency of these transactions allows firms to inflate earnings simply by shifting

[29] Because Jian and Wong (2010) base their empirical analyses on the assumption that the residual term that only capture sales volumes inflation, when they examine whether related sales and the associated operating margins are high for firms that have incentives to inflate earnings, they times the average operating margin with the residual as the explained variable in their models. In this approach, they have clearly separated the proxy from price manipulation. Therefore, the primary analysis of Jian and Wong (2010) is based on assumption that the residual term generated by their cross-sectional regression captures volumes inflation only.

the next period's related sales to the current period, accelerating RPSs are likely to be less costly than other real earnings management tools as discussed in Roychowdhury (2006). As I argued previously, RPSs can also be manipulated through transfer pricing that should be distinct from accruals manipulation. Transfer pricing shifts earnings between related parties, while accruals manipulation shifts earnings between periods. Therefore, the issue of whether these income-increasing RPSs are associated with price inflation in China remains unclear. This study provides a novel and original approach to examine the prevalence of price inflation in RPSs. I attempt to establish the association between the change in gross margin and income-increasing RPSs that will be discussed in following sections.

To capture price manipulation via RPSs, I develop the models of the change in GMs (ΔGM_t) and industry-mean adjusted gross margins (EGM_t). ΔGM_t is defined as the difference in gross margins for a firm between two accounting periods. EGM_t is defined as the deviation from the industry mean of gross margin, excluding the own observation for which I calculate the measure. This thesis focuses on average gross margins generated from both RPS and non-RPS because I cannot identify the exact transaction price for RPS. Using ΔGM_t and EGM_t as the proxies for price manipulation requires an adequate control for changes in cost of goods sold, which will be discussed in Section 4.3.1. The change measure (ΔGM_t) and cross-sectional measure (EGM_t) are stated as the Equations (2a) and (2b):

$$\Delta GM_t = \frac{GrossProfit_t}{SALE_t} - \frac{GrossProfit_{t-1}}{SALE_{t-1}} \quad (2a)$$

$$EGM_t = \frac{GrossProfit_t}{SALE_t} - mean\left(\frac{GrossProfit_t}{SALE_t}\right) \quad (2b)$$

Where: $GrossProfit_t$ is the gross profits in the current year; $SALE_t$ donates the total sales revenue in the current year; ΔGM_t is the change in gross margin, using Equation (2a). $ERPS_t$ is industry-mean adjusted gross margin, using Equation (2b).

4.3 Empirical Models to Test Hypotheses

This section discusses the empirical models to examine the hypotheses. Section 4.3.1 presents the empirical models to test H1, H1a and H1b. Section 4.3.2 presents the empirical models to test H2a and H2b.

4.3.1 Empirical Models to Test H1, H1a and H1b

H1 examines the propping nature of RPS by establishing the relation between price inflation and income-increasing RPS. H1a and H1b examine the effect of the 2001 RPT measurement regulation on the prevalence of price inflation in RPSs. This section develops the empirical models to test H1, H1a and H1b. ΔGM_t, the main dependent variable in the model to test H1, is measured as gross margin in the current year less the previous year. As H1 is concerned with firms attempting to prop up their earnings, I focus on income-increasing RPS, where the reported RPS figure in the current year is greater than that of the previous year. The change in RPS is decomposed into the positive change in RPS ($P\Delta RPS_t$) and negative change in related parties ($N\Delta RPS_t$). The main test variable $P\Delta RPS_t$, is equal to the difference in RPS between the current previous year, if there is an increase in RPS between these two years and zero otherwise.

H1 predicts that, if listed firms inflate the transaction price via income-increasing RPSs, there should be a positive association between the change in gross margin and income-

increasing RPS. If there is no price inflation, $P\Delta RPS_t$ captures volume inflation. Because the change in gross margin captures price inflation, it should be distinct from $P\Delta RPS_t$, and there should be no significant relationship between these two variables.

The change in gross margin is expressed as a function of: income-increasing RPSs; the lagged gross margin; the lagged change in gross margin; the change in cost of goods sold; the lagged market-to-book ratio; the lagged property; plant and equipment; the change in property, plant and equipment; the lagged intangible assets; the change in intangible assets; the lagged selling expense; the lagged size; the lagged leverage; industry membership and year dummies. To test H1, the following equation is estimated as:

$$\Delta GM_t = f\begin{pmatrix}\boldsymbol{P\Delta RPS_t}, GM_{t-1}, \Delta GM_{t-1}, \Delta COGS_t, MTB_{t-1}, PPE_{t-1}, \Delta PPE_t, \\ INTAN_{t-1}, \Delta INTAN_t, EXP_{t-1}, LEV_{t-1}, SIZE_{t-1}, IND, YEAR\end{pmatrix} \quad (3a)$$

Where:

ΔGM_t	=	the change in gross margin from year t-1 to year t, measured as $GrossProfit_t/SALE_t$ - $GrossProfit_{t-1}/SALE_{t-1}$
$P\Delta RPS_t$	=	the positive change in RPS from year t-1 to year t, calculated as $RPS_t/SALE_t$ - $RPS_{t-1}/SALE_{t-1}$, when ($RPS_t/SALE_t$ - $RPS_{t-1}/SALE_{t-1}$) is positive and 0 otherwise
GM_{t-1}	=	gross margin measured as $GrossProfit_t/SALE_t$ in year t-1
ΔGM_{t-1}	=	the change in gross margin from year t-2 to year t-1
$\Delta COGS_t$	=	the change in cost of goods sold from year t-1 to year t, calculated as $(COGS_t - COGS_{t-1})/COGS_{t-1}$
MTB_{t-1}	=	the lagged market-to-book ratio
PPE_{t-1}	=	the log form of property, plant and equipment (*PPE*) in year t-1
ΔPPE_t	=	the change in the log form of *PPE* from year t-1 to year t
$INTAN_{t-1}$	=	the log form of intangible assets (*INTAN*) in year t-1
$\Delta INTAN_t$	=	the change in the log form of intangible assets from year t-1 to year t
EXP_{t-1}	=	the lagged selling expenses (*EXP*), measured by $EXP_{t-1}/SALE_{t-1}$
LEV_{t-1}	=	the long-term debt deflated by total assets in year t-1
$SIZE_{t-1}$	=	the log form of market value in year t-1
IND	=	dummy variables indicating industry sector membership
YEAR	=	dummies for years

So that the models are dynamically complete, the control variables include both lagged gross margin (GM_{t-1}) and the lagged change in gross margin (ΔGM_{t-1}) in the model. This approach is consistent with the models used in previous studies concerned with changes in profitability and core earnings margin (Fama & French 2000; Penman & Zhang 2002; McVay 2006; Fan et al. 2010). Specifically, Fama and French (2000) found that the lagged profitability and the lagged change in profitability are negatively associated with the current change in profitability. Consistent with Fama and French (2000), McVay (2006) found that both lagged core earnings margin and the lagged change in core earnings margin are negatively associated with the current change in core earnings margin. Thus, the coefficients on GM_{t-1} and ΔGM_{t-1} are expected to be negative.

The change in cost of goods sold ($\Delta COGS_t$) is included as an explanatory variable to control for the potential effect of changes in costs on gross margins and other earnings management tools on the change gross margin. The change in cost of goods sold is expected to be negatively associated with the change in gross margin. Moreover, firms can manipulate the price and timing of RPP or to increase production to lower the fix costs allocation to inflate gross margin. Controlling for changes in costs and the effects of other earnings management tools allows the model to focus on predicting the association between the change in gross margin and income-increasing RPS. The coefficient on $\Delta COGS_t$ is expected to be negative.

Simon and Sullivan (1993) found that the financial market value of a firm incorporates the effect of a brand value. They refer brand value to the capitalised value of profits resulting from a brand name. Because the market valuation for a firm incorporates the expected value of future returns and profitability, if a distinctive brand value increases future returns, the increase is impounded into the security price. Keller (1997) suggested

that firms having a more distinctive brand value are usually associated with a larger operating margin, more inelastic consumer response to price increases and a more elastic response to price decreases. Therefore, the brand value denoted by MTB_{t-1}, is included as an explanatory variable to control for future growth opportunities and the market recognition of a brand name.

The lagged property, plant and equipment (PPE_{t-1}) is included to control for the effect of fixed assets on gross margin generated. The PPE_{t-1} should be positively related to gross margin because investments in *PPE* reflect managers' expectations for product quality and future returns. Firms might increase gross margins to accelerate cash inflows to cover the initial investment. ΔPPE_t is included to control for the effect of the change in *PPE* on gross margin generated in the current year.

Simon and Sullivan (1993) indicated that intangible assets like patents, copyrights, trademarks, and franchises have more earning power than physical assets such as *PPE*. This is because intangibles represent a firm's competitive advantages and specialised resources that permit the firm to generate margins and earn cash flows in excess of the return on fixed tangible assets. Therefore, the $INTAN_{t-1}$ is included to control for the effect of past intangibles on the gross margin generated in the current year. $\Delta INTAN_t$ is included to control for the effect of the change in intangibles on the change in gross margin in this period. The coefficients on $INTAN_{t-1}$ and $\Delta INTAN_t$ are expected to be positive.

The lagged selling expense (EXP_{t-1}) is included to control for the effect of past advertising, exhibition and other marketing expenditure on the change in gross

margin.[30] EXP_{t-1} is included for several reasons. First, prior studies explore the relation between lagged advertising expense and current sales, and demonstrate that lagged advertising expenses have a long-term effect on sales that is carried across periods (Thomas 1989). Second, past advertising has an effect on market recognition of the brand name (Keller, 1997). A brand name largely influences consumers' willingness to pay higher than average prices, or buy more frequently than other similar products. The coefficient on EXP_{t-1} is expected to be positive.

Finally, the model includes several other control variables that might be associated with the change in gross margin. The lagged logarithm of the market value of equity ($SIZE_{t-1}$) controls for size effects. The lagged leverage (LEV_{t-1}) is measured as the long-term debt scaled by total assets controls for the financial leverage. *IND* and *YEAR* dummies are included to control for industry and fixed year effects. For all the tests, the standard errors are clustered by firm to correct for serial correlation and heteroscedascity.

To examine the potential effect of the 2001 RPT measurement regulation on earnings management behaviours via RPS, the investigation divides the sample period into three regimes. AS the 2001 RPT measurement regulation was effective from 21 December 2001 and had very limited effects in the 2001 reports, I define the years 1999 to 2001 as the pre-RPT measurement regulation period, 2002 as the transition period and 2003 to 2005 as the post-RPT measurement regulation period.[31]

[30] According to the Chinese accounting standard, the expenses incurred by an enterprise in the sales of products such as advertising, exhibition, insurance, packaging and transportation expenses are included in the selling expense account.

[31] The 2001 RPT measurement regulation applies only to RPTs traded after 21 December 2001. Firms are not required to make adjustments for related party transactions traded before the effective date. Therefore, I include the year 2001 in the pre-RPT regulation period as this regulation has only a 10-day effect on related party transactions in 2001. The first report period of related party transactions starts in 1999 because 1997 was the first year requiring disclosure of RPTs in China with poor compliance, and I use lagged data (starting in1998) to calculate change measures.

I ran the model (3a) in different regulatory regimes respectively to observe whether there is a difference in earnings management behaviours. If firms inflated the transaction price of RPS, there should have been a positive coefficient on $P\Delta RPS_t$ in the pre-RPT measurement regulation period. However, if listed firms were not involved in price inflation or focused on RPS volume inflation in the post-RPT measurement regulation period, the positive association between the change in gross margin and income-increasing RPSs should become insignificant.

In further analysis, the level of industry-mean adjusted RPS ($ERPS_t$) is decomposed into positive *ERPS* ($PERPS_t$) and negative ERPS ($NERPS_t$). I conducted a level test by examining the association between industry-mean-adjusted gross margin (EGM_t) and $PERPS_t$. Although the positive level of *ERPS* does not necessarily mean income-increasing RPSs, it is still worthwhile to examine the relation between EGM_t and $PERPS_t$ in different regulatory regimes to see whether the level model provides further evidence regarding the price inflation via RPSs. If firms inflated the transaction price via RPSs, the level of industry-mean adjusted gross margins (EGM_t) would be positively correlated with the level of positive industry-mean adjusted RPS. If the high level of industry-mean adjusted RPSs is not associated with price inflation, then there should no association between these two variables. The level model is stated in the following Equation (3b):

$$EGM_t = f\begin{pmatrix} \boldsymbol{PERPS_t}, EGM_{t-1}, \Delta COGS_t, MTB_{t-1}, PPE_{t-1} \\ INTAN_{t-1}, EXP_{t-1}, LEV_{t-1}, SIZE_{t-1}, IND, YEAR \end{pmatrix} \quad (3b)$$

Where:

EGM_t	=	the difference between $GrossProfit_t/SALE_t$ for firm i and the industry-mean level of $GrossProfit_t/SALE_t$ excluding the own observation for which I calculate the measure
$PERPS_t$	=	the positive difference between $RPS_t/SALE_t$ for firm i and the industry-mean level of $RPS_t/SALE_t$ excluding the own

		observation for which I calculate the measure and 0 otherwise
$\Delta COGS_t$	=	the change in cost of goods sold from year t-1 to year t, calculated as $(COGS_t - COGS_{t-1})/COGS_{t-1}$
MTB_{t-1}	=	the market-to-book ratio in year t-1
PPE_{t-1}	=	the log form of PPE in year t-1
$INTAN_{t-1}$	=	the log form of intangible assets (*INTAN*) in year t-1
EXP_{t-1}	=	the lagged selling expenses (*EXP*), measured by $EXP_{t-1}/SALE_{t-1}$
LEV_{t-1}	=	the long-term debt deflated by total assets in year t-1
$SIZE_{t-1}$	=	the log form of market value in year t-1
IND	=	dummy variables indicating industry sector membership
YEAR	=	dummies for years

4.3.2 Empirical Models to Test H2a and H2b

This section describes the empirical models used to test H2a. H2a relates to whether RPSs are used by firms to meet or beat the regulatory thresholds of new equity offering and delisting. The ΔRPS_t and $ERPS_t$, defined in Section 4.2, are used as the dependent variables to test this hypothesis. Following previous literature (Chen & Yuan, 2004; Haw et al. 2005; Yu et al. 2006; Chen et al. 2008), I define firms with earnings management incentives as those likely to use RPS to beat the regulatory benchmarks of new share issuance or avoid delisting. The variables $SUSPECT_t$ and ST_t are used to proxy for firms with incentives to meet the ROE benchmark of new share issuance and delisting respectively. The measure of $SUSPECT_t$ must satisfy two conditions.[32] First, the reported ROEs of these firms are required to be more than the minimum regulatory thresholds of new equity offerings. Second, the pre-managed ROEs ($PROE_t$), defined as ROEs excluding manipulated RPSs and associated cost of goods sold, are lower than the thresholds. The equation to calculate the $PROE_t$ is stated as following:

[32] The methodology of identifying earnings management firms is consistent with previous literature (Chen and Yuan 2004; Chen et al. 2008; Cohen et al. 2011). For example, Chen and Yuan (2004) focused on the use of non-recurring items to manipulate earnings, and identified firms where reported ROE is greater than the thresholds but ROE excluding non-recurring items is less than the regulatory thresholds as suspected earnings management firms. Cohen et al. (2011) focused on the use of warranty expenses as an indicator of earnings management, and defined suspected earnings management firms as those whose earnings are greater than relevant benchmarks but pre-managed earnings are lower than the benchmarks.

$$PROE_t = ROE_t - \frac{\Delta RPS_t \times (SALE_t - COGS_t)}{OE_t} \ (4a - \ change\ model)$$

$$PROE_t = ROE_t - \frac{(ERPS_t) \times (SALE_t - COGS_t)}{OE_t} \ (4b - \ level\ model)$$

Where ROE_t is the firms' return on equity, calculated as net earnings after tax divided by total owners' equity in the current year; $SALE_t$ donates the sales revenue in the current year; $COGS_t$ denotes the firms' cost of goods sold in the current year; and OE_t denotes total owners' equity in the current year.[33]

In the terms of the cross-sectional model, the lagged excess *RPS* ($ERPS_{t-1}$) is included to control for the persistence of $ERPS_t$. The coefficient on $ERPS_{t-1}$ is expected to be positive. Several firm-specific control variables, such as firm size ($SIZE_t$), leverage (LEV_t), and the lagged market-to-book (MTB_{t-1}) are also included. The lagged market-to-book value (MTB_{t-1}) is included to control for future growth opportunities. Financial leverage (LEV_t) increases the pressure for a firm to present stable earnings, providing incentives for firms to manage earnings (DeFond & Jiambalvo 1994; Sweeney 1994; Healy & Wahlen 1999). When a firm is highly leveraged, listed firms might also have incentives to avoid violating debt covenants via earnings management (DeFond & Jiambalvo 1994). The firm size ($SIZE_t$) is included to control for the size effect. Larger firms might have more related parties and more easily manipulate earnings via RPS. In contrast, Watts and Zimmerman (1986) suggest that larger firms may receive more attention from the government, thereby reducing incentives to manipulate earnings.

[33] Depending on the CSRC profitability regulations of new equity offerings and delisting, for years 1999–2005, I calculate SUSPECT as a dummy variable where 1 equals if (1) ROE is more than 10% while PROE is less than 10% but not less than 6%, or (2) ROE is more than 6% while PROE is less than 6%. I require the ROE of ST firms to be positive and not more than 6%, but PROE to be negative.

In terms of the change model, the lagged RPS (RPS_{t-1}) and the lagged change in *RPS* from year t-2 to year t-1 (ΔRPS_{t-1}) are included, allowing the model to vary the degree of RPS reversion, based on the level in the previous year. The coefficients on $ERPS_{t-1}$ and ΔRPS_{t-1} are expected to be negative. I replace the level of firm size and leverage with the change in size ($\Delta SIZE_t$), the change in leverage (ΔLEV_t). I retain the lagged market-to-book ratio (MTB_{t-1}) in the model. Final, the industry and year dummies are included to control for industry and year effects. The change model (5a) and cross-sectional model (5b) to test H2 are presented as following:

$$\Delta RPS_t = f\begin{pmatrix} SUSPECT_t, ST_t, RPS_{t-1}, \Delta RPS_{t-1}, \Delta SIZE_t, \\ \Delta LEV_t, MTB_{t-1}, IND, YEAR \end{pmatrix} \quad (5a)$$

$$ERPS_t = f\begin{pmatrix} SUSPECT_t, ST_t, ERPS_{t-1}, SIZE_t, \\ LEV_t, MTB_{t-1}, IND, YEAR \end{pmatrix} \quad (5b)$$

Where:

ΔRPS_t	=	the change in RPS, measured as $RPS_t/SALE_t$ - $RPS_{t-1}/SALE_{t-1}$
$ERPS_t$	=	the difference between $RPS_t/SALE_t$ for firm i and the industry-mean level of $RPS_t/SALE_t$ excluding the own observation for which I calculate the measure
$SUSPECT_t$	=	calculated as 1 if ROE_t is more than the regulatory thresholds of new equity offerings and (1) $PROE_t$ (ROE_t excluding ΔRPS_t and its associated $COGS_t$) is less than the regulatory thresholds for the change model; (2) $PROE_t$ (ROE_t excluding $ERPS_t$ and its associated $COGS_t$) is less than the regulatory thresholds for the cross-sectional model; and 0 otherwise
ST_t	=	calculated as 1 if ROE_t is positive but less than the regulatory thresholds of new equity offerings and (1) $PROE_t$ (ROE_t excluding ΔRPS_t and its associated $COGS_t$) is negative for the change model; (2) $PROE_t$ (ROE_t excluding $ERPS_t$ and its associated $COGS_t$) is negative for the cross-sectional model, and 0 otherwise
$SIZE_t$	=	the log form of market value in year t
$\Delta SIZE_t$		the change in the log form of market value from year t-1 to year t
LEV_t	=	the long-term debt deflated by total assets in year t
ΔLEV_t		the change in leverage from year t-1 to year t
MTB_{t-1}	=	the market-to-book ratio in year t-1
IND	=	dummy variables indicating industry sector membership
YEAR	=	dummy variables for years

I examine H2a in different regulatory regimes to investigate the effectiveness of the 2001 RPT regulation in reducing RPS inflation. I argue that, if these regulations are fully effective after the passage of the 2001 RPT measurement regulation, there should be no association between earnings management and incentive variables in the post-RPT measurement regulation regime. The coefficient on $SUSPECT_t$ and ST_t should be not significant in the post-RPT regulation period. However, if regulations are not fully effective in eliminating earnings inflation via RPSs, I expect at least a reduction in earnings inflation for *SUSPECT* and *ST* firms after the introduction of the 2001 RPT measurement regulation, when compared to similar firms before the effect of the 2001 RPT measurement regulation.

To provide further evidence regarding the effectiveness of 2001 RPT measurement regulation in reducing earnings inflation via RPSs, I add the regulatory dummy variable to Equation (2), and interact them with earnings management incentive variables. The variable $TRAN_t$ refers to the transitory period, which is defined as '1' if the year is 2002 and '0' otherwise. The variable $POST_t$ refers to the post-regulation period, which is defined as '1' if years are 2003, 2004, 2005 and '0' otherwise. ΔRPS and *ERPS* are predicted to be lower for *SUSPECT* and *ST* firms than in the post-regulation period (2003–2005), when compared to *SUSPECT* and *ST* firms in the pre-regulation period (1999–2001). The coefficients on the interaction between regulatory regime dummy variables and earnings management incentive variables are expected to be negative. The empirical models for H3 are stated as:

$$\Delta RPS_t = f\begin{pmatrix} SUSPECT_t, ST_t, SUSPECT_t \times TRAN_t, SUSPECT_t \times POST_t, \\ ST_t \times TRAN_t, ST_t \times POST_t, TRAN_t, POST_t, \\ \Delta SIZE_t, \Delta LEV_t, MTB_{t-1}, IND, YEAR \end{pmatrix} (6a)$$

$$ERPS_t = f\begin{pmatrix} SUSPECT_t, ST_t, SUSPECT_t \times TRAN_t, SUSPECT_t \times POST_t, \\ ST_t \times TRAN_t, ST_t \times POST_t, TRAN_t, POST_t, \\ SIZE_t, LEV_t, MTB_{t-1}, IND, YEAR \end{pmatrix} (6b)$$

Where:

ΔRPS_t	=	the change in RPS, measured as $RPS_t/SALE_t - RPS_{t-1}/SALE_{t-1}$
$ERPS_t$	=	the difference between $RPS_t/SALE_t$ for firm i and the industry-mean level of $RPS_t/SALE_t$ excluding the own observation for which I calculate the measure
$SUSPECT_t$	=	calculated as 1 if ROE_t is more than the regulatory thresholds of new equity offerings and (1) $PROE_t$ (ROE_t excluding ΔRPS_t and its associated $COGS_t$) is less than the regulatory thresholds for the change model; (2) $PROE_t$ (ROE_t excluding $ERPS_t$ and its associated $COGS_t$) is less than the regulatory thresholds for the cross-sectional model; and 0 otherwise
ST_t	=	calculated as 1 if ROE_t is positive but less than the regulatory thresholds of new equity offerings and (1) $PROE_t$ (ROE_t excluding ΔRPS_t and its associated $COGS_t$) is negative for the change model; (2) $PROE_t$ (ROE_t excluding $ERPS_t$ and its associated $COGS_t$) is negative for the cross-sectional model, and 0 otherwise
$TRAN_t$	=	1 if the year is 2002 and 0 otherwise
$POST_t$	=	1 if years are 2003, 2004, 2005 and 0 otherwise
$SIZE_t$	=	the log form of market value in year t
$\Delta SIZE_t$		the change in the log form of market value from year t-1 to year t
LEV_t	=	the long-term debt deflated by total assets in year t
ΔLEV_t		the change in leverage ratio from year t-1 to year t
MTB_{t-1}	=	the lagged market-to-book ratio in year t
IND	=	dummy variables indicating industry sector membership
$YEAR$	=	dummy variables for years

4.4 Chapter Summary

This chapter described the major variables used to test the hypotheses. First, the methods to measure earnings management were presented in Section 4.2. Then, the empirical models used in the study to test the hypotheses were discussed in Section 4.3. The first model examined the association between the change in gross margin and the income-increasing RPS, and the effect of the 2001 RPT measurement regulation on price inflation in RPSs. The second model examined earnings management incentives. The third model examined the effect of regulatory change on the extent of earnings management. The next chapter presents a description of the sampling process, data sources and univariate analysis.

Chapter 5: Data and Descriptive Statistics

5.1 Introduction

The purpose of this chapter is to describe the sampling procedures, data sources and descriptive statistics. Section 5.2 provides an insight into the characteristics of the sample. Section 5.3 presents the descriptive statistics for variables defined in Chapter Four. Section 5.4 presents the Pearson correlation matrix for the variables, and Section 5.5 summarises.

5.2 Sample and Data

The population of interest for this study is all Chinese firms listed on the Shanghai Stock Exchange and Shenzhen Stock Exchange, from 1 January 1999 to 31 December 2005. I require firms to be consistently listed from 1999 to 2005.[34] The data of accounting and corporate governance were obtained for the years 1998 to 2005 from the CSMAR database. The data of RPTs were hand-collected from company annual reports. Following the 1997 RPT standard, listed companies have to report the identity of their related parties, the nature of their relations with these related parties, and the types and amounts of RPTs in a special footnote to their financial statements. Most listed firms also disclose a summary of their RPT issues and data in the section '*Announcement of Material Matters*' in their annual reports. The footnote disclosure and the section of material matters announcement are primary sources for the RPT variables.

[34] I do not include observations after 2006, as the institutional background changes significantly in 2006. The 2006 version of Chinese accounting standards exhibits several differences in terms of the definition, disclosure requirement and accounting treatment for RPTs.

The first reporting period for RPTs starts in 1998, as 1997 was the first year requiring disclosure of RPTs in China with poor compliance. The data in 1998 are used only to calculate change measures of RPS and gross margins. The initial sample yielded 5,815 year observations. Thirty-five observations with missing, negative or zero sales are deleted because sales are used as a main deflator for the majority of variables. To construct the sample of RPS, firms reporting at least one RPS during 1998 to 2005 are required. This step yields 4,629 year observations. Finally, a minimum of five observations per industry per fiscal year is required to ensure a reliable benchmark against which to evaluate each firm's RPS. The final sample of RPS has 4,611 year observations used to calculate the measures of manipulated RPS. However, the number of observations in some tests may be smaller, depending on model-specific variable requirements. Table 5.1 describes the sample selection procedures.

Table 5.1: Sample Selection Procedures

Procedure	Observations
Observations listed during 1999 to 2005	5,815 firm-year observations
Observations with no missing, negative or zero sales	5,780 firm-year observations
Observations report at least one RPS during 1998–2005	4,629 firm-year observations
A minimum of five observations per industry per year is required	4,611 firm-year observations

Note: This table presents the sample selection procedures.

The sample composition by industry, classified based on the three-digit CSRC code, is described in Table 5.2. The sample of RPS originates from several industries, but they are concentrated in a number of groups. As reported in Table 5.2, about 34.96% of the sample belongs to three industry groups: machinery, equipment and instrument (693 observations: 15.03%); petroleum, chemical, plastics and rubber products (529 observations: 11.47%); and real estate (390 observations: 8.46%). Not surprisingly, banking and financial institution (35 observations: 0.76%) constitute the smallest part of our sample. On average, about 79.8% of firms report at least one RPS during the sample period, which suggests that RPSs are very prevalent in China.

The last column reports the industry-mean ratio of RPSs, scaled by total sales revenues. The statistic shows that six industries rely heavily on RPSs in which more than ten per cent of sales are related. As shown in the last two columns of Table 5.2, about 25.25% of sales in public utilities are RPSs; 16.74% for mining and related support services; 13.54% for metal and non-metallic mineral products; 11.76% for electronics; 11.57% for petroleum, chemical, plastics and rubber products; and 11.44% for machinery, equipment, and instrument.

Table 5.2: Sample Composition

CSCR code	Industry	Full Sample (N)	Sample of RPS		n/N (%)	*RPS /SALE*
			n	(%)		
A01-A09	Farming, Forestry, Animal husbandry, and Fishing	96	89	1.93	92.71	4.37
B01-B09	Mining and -Related Support Services	97	90	1.95	92.78	16.74
C01-C05	Food and Beverage	272	224	4.86	82.35	5.28
C11-C21	Textile, Apparel, Fur, and Leather	181	161	3.49	88.95	5.03
C31-C37	Paper, Printing, Culture and Education Goods	83	70	1.52	84.34	9.83
C41-C47	Petroleum, Chemical, Plastics and Rubber Products	578	529	11.47	91.52	11.57
C51-C57	Electronics	175	154	3.34	88.00	11.76
C61-C69	Metal and Non-metallic Mineral Products	406	371	8.05	91.38	13.54
C71-C78	Machinery, Equipment, and Instrument	875	693	15.03	79.20	11.44
C81-C85	Medicine and Biological Products	322	245	5.31	76.09	7.46
D01-D05	Public Utilities	280	231	5.01	82.50	25.25
E01-E05	Construction	42	42	0.91	100	5.84
F01-F21	Transportation and Warehousing	189	140	3.04	74.07	5.34
G81-G87	Information Technology	329	315	6.83	95.74	9.91
H01-H21	Wholesale and Retail Trades	546	301	6.53	55.13	1.48
I01-I31	Banking and Financial Institution	77	35	0.76	45.45	8.11
J01-J09	Real Estate	537	390	8.46	72.63	5.52
K01-K99	Public Facilities and Other Services	214	161	3.49	75.23	5.04
L01-L99	Communication and Cultural Industrials	63	63	1.37	100	8.56
M	Conglomerates	418	307	6.66	73.44	3.74
Total		5780	4611	100	79.78	

Note: this table reports the sample distribution by industry. N is the number of observations of a particular two-digit CSRC industry in the full sample; n is the number of observations of sample of RPSs; n/N donates the coverage of related party sale sample to the full sample. The column reports the mean ratio of RPSs scaled by total sales.

5.3 Descriptive Statistics

This section presents the summary statistics for the sample of RPSs during 1999 to 2005. Panel A of Table 5.3 presents descriptive statistics of general variables. Panel B presents descriptive statistics of major earnings management variables. Panel C presents descriptive statistics of control variables.

5.3.1 Statistics of Continuous Variables

The descriptive statistics of general variables are presented in the Panel A of Table 5.3. The mean (median) total asset of sample firms is 2,350 (1,400) in millions. The mean (median) market value is 2,800 (1,890) in millions. The mean (median) sales of sample firms is 1,600 (1,310) in millions. The mean (median) cost of goods sold is 1,310 (490) in millions. The mean (median) gross profits is 93 (42) in millions. The mean (median) RPS is 212 (8) in millions.

Descriptive statistics of earnings management variables during 1999 to 2005 are reported in the penal B. The variable *RPS/SALE* indicates that on average, RPSs count for 11.1% of total sales. The mean ΔRPS is -0.006. The variable ΔRPS indicates that on average, there is a negative change in *RPS/SALE*.

Table 5.3: Descriptive Statistics and Variable Definitions

	N	Min	Mean	Median	Max	SD
Panel A General Variables (1999–2005)						
Total Asset (in million)	4611	27	2,350	1,400	57,600	3,230
Market Value (in million)	4611	53	2,800	1,890	52,900	3,220
Sales (in million)	4611	0.001	1,600	650	66,600	3,390
Cost of Goods Sold (in million)	4611	0.002	1,310	490	64,600	2,980
Gross Profit (in million)	4611	-3,680	93	42	5,590	312
RPS (in million)	4611	0	212	8	23,700	969
Panel B Earnings Management Variables (1999–2005)						
RPS/SALE	4611	0.000	0.111	0.014	1.000	0.215
ΔRPS	3950	-1.000	-0.006	0.000	1.000	0.164
AbsΔRPS	3950	0.000	0.072	0.013	1.000	0.148
Positive ΔRPS	1673	0.000	0.091	0.027	1.000	0.158
Negative ΔRPS	1680	-1.000	-0.099	-0.031	0.000	0.169
PΔRPS	4611	0.000	0.033	0.000	1.000	0.105
NΔRPS	4611	-1.000	-0.039	0.000	0.000	0.116
ERPS	4611	-0.351	0.000	-0.058	0.986	0.212
AbsERPS	4611	0.000	0.137	0.090	0.986	0.161
Positive ERPS	1174	0.000	0.269	0.172	0.986	0.258
Negative ERPS	3437	-0.351	-0.092	-0.083	0.000	0.065
PERPS	4611	0.000	0.069	0.000	0.986	0.175
NERPS	4611	-0.351	-0.068	-0.058	0.000	0.069
Gross Margin	4611	-0.872	0.237	0.209	0.963	0.159
ΔGM	4611	-3.973	-0.009	-0.008	1.731	0.121
EGM	4611	-4.005	-0.001	-0.013	0.678	0.161
Panel C Control Variables (1999–2005)						
ΔCOGS	4608	-0.707	0.235	0.144	3.243	0.534
MTB	4611	0.704	1.426	1.253	4.687	0.555
PPE	4611	12.707	19.654	19.651	24.312	1.290
ΔPPE	4608	-5.872	0.097	0.031	3.511	0.460
INTAN	4611	0.000	15.426	17.166	21.187	5.408
ΔINTAN	4608	-18.75	0.334	-0.019	18.997	3.436
EXP	4611	0.000	0.057	0.037	0.599	0.071
LEV	4611	0.073	0.503	0.488	3.179	0.274
ΔLEV	4608	-1.443	0.028	0.016	2.580	0.156
SIZE	4611	17.776	21.393	21.362	24.692	0.811
ΔSIZE	4607	-3.017	0.047	0.017	1.646	0.277
ROE	4611	-1.858	0.013	0.063	0.313	0.263
OWNCON	4564	0.031	0.433	0.422	0.886	0.170
BORDIND	4597	0.000	0.191	0.222	0.727	0.160

This table presents the descriptive statistics of continuous variables during 1999–2005. See Appendix Five for variable definitions.

The ΔRPS is decomposed into the *Positive* ΔRPS and *Negative* ΔRPS, and $P\Delta RPS$ and $N\Delta RPS$ respectively. The variables *Positive* ΔRPS and *Negative* ΔRPS denote the positive change in *RPS/SALE*, and the negative change in *RPS/SALE*. The variables $P\Delta RPS$ and $N\Delta RPS$ are used as the main independent variables in the test of H1. The $P\Delta RPS$ denotes income-increasing RPS, defined as the positive change in *RPS/SALE* and zero otherwise, while the $N\Delta RPS$ denotes income-decreasing RPS, defined as the negative change in *RPS/SALE* and zero otherwise.

The difference between these two sets of variables is that the measures of $P\Delta RPS$ ($N\Delta RPS$) set non-positive (non-negative) ΔRPS as zeroes, whereas the measures of *Positive* ΔRPS (*Negative* ΔRPS) refer only to positive (negative) ΔRPS. The statistics of both sets of variables are presented because $P\Delta RPS$ ($N\Delta RPS$) is used as the main test variable in the model to test H1, but *Positive* ΔRPS (*Negative* ΔRPS) provides information regarding comparison of the frequency of the income-increasing RPSs with income-decreasing RPSs.

The variables *Positive* ΔRPS and *Negative* ΔRPS indicate that the frequency of positive change in *RPS/SALE* (1673 times) is slightly lower than the frequency of negative change in *RPS/SALE* (1680 times) during the sample period. The mean of *Positive* ΔRPS (0.091) is lower than the absolute value of *Negative* ΔRPS (0.099), suggesting that on average, the extent of positive change in *RPS/SALE* is lower than that of negative change in *RPS/SALE*. The standard deviation (SD) of *Positive* ΔRPS (0.158) is lower than the *Negative* ΔRPS (0.169), suggesting that on average the variation of positive change in *RPS/SALE* is lower than that of negative change in *RPS/SALE*. The

results for *PΔRPS* and *NΔRPS* are consistent with findings of the *Positive* Δ*RPS* and *Negative* Δ*RPS*.

The variable *ERPS* is the difference between $RPS_t/SALE_t$ for the own firm and the industry-mean level of $RPS_t/SALE_t$ excluding the own observation for which I calculate the measure. The variable *AbsERPS* is absolute value of *ERPS*. The level measure *ERPS* is decomposed into *Positive ERPS* and *Negative ERPS*, and *PERPS* and *NERPS* respectively. The maximum of *ERPS* is 0.986 and the minimum is -0.351, showing that the extent of some extreme positive *ERPS* is higher than that of negative *NRPS*. Consistent with this finding, it can be seen that the mean (median) value of *Positive ERPS* is 0.269 (0.172) is higher than the absolute mean (median) value of *Negative ERPS*, 0.092 (0.083). The results for *PERPS* and *NERPS* are consistent with the finding of *Positive ERPS* and *Negative ERPS*. However, the number of *Positive ERPS* is significantly less than that of *Negative ERPS*.

The mean (median) gross margin is 0.237 (0.209). The SD of gross margin is 0.159, the minimum value is -0.872 and the maximum is 0.963. The mean (median) Δ*GM* is -0.009 (-0.008). The minimum Δ*GM* is -3.973 and the maximum is 1.731. This indicates that on average, there is a negative change in gross margin. The mean (median) *EGM* is -0.001 (-0.013), the minimum *EGM* is -4.005 and the maximum is 0.161, indicating that the extent of negative *EGM* is higher than that of positive *EGM*.

Summary statistics of control variables (1999–2005) are reported in Panel C. The mean (median) Δ*COGS* is 0.235 (0.144). The mean (median) *MTB* is 1.426 (1.253). The mean (median) *PPE* is 19.654 (19.651). The mean (median) Δ*PPE* is 0.097 (0.031). The mean (median) *INTAN* is 15.426 (17.166). The mean (median) Δ*INTAN* is 0.334 (-0.019). The

mean (median) *EXP* is 0.057 (0.037). The mean (median) *LEV* is 0.503 (0.488). The mean (median) ΔLEV is 0.028 (0.016). The mean (median) *SIZE* is 21.393 (21.362). The mean (median) *ROE* is 0.013 (0.063). The minimum *ROE* is -1.858 and the maximum *ROE* is 0.313. The SD of *ROE* is 0.263. It is interesting to note that the average *ROE* is just higher than the minimum profitability requirement of delisting, and the median *ROE* is just higher than the minimum profitability requirement of new equity offerings. The mean (median) *OWNCON* is 0.433 (0.422). This indicates that in China, ownership is highly concentrated. On average, nearly 43.3% of shares are owned by the controlling shareholders. The mean (median) *BOARDIND* is 0.191 (0.222). The variable *BOARDIND* suggests that, on average, 19.1% of board members in Chinese firms are independent directors during the sample period.

5.3.2 Descriptive Statistics by Regimes

This section presents the descriptive statistics of continuous variables of firms having RPSs by regulatory regimes. Statistics of earnings management variables of firms having RPSs by regulatory regimes are reported in Panel A of Table 5.4. The gradual decrease in the mean and the SD of *RPS/SALE* and *abs*ΔRPS suggests earnings management in the post-RPT regulation period might be less aggressive, which can also be evidenced by a reduction in the SDs of ΔRPS. It is not surprising to observe a gradual and significant decrease in *Positive* ΔRPS (*P*ΔRPS), and an increase in *Negative* ΔRPS (*N*ΔRPS). Consistent with the change measures, the SD of *ERPS* decreases.[35] The mean and SD of *AbsERPS* decreased across the regulatory regimes. Moreover, there is a significant decrease in *Positive ERPS* (*PERPS*) and an increase in *Negative ERPS*

[35] This is not surprising: I do not find any significant change in terms of the level of *ERPS*, because this variable is an industry-mean adjusted measure and the mean of *ERPS* must be zero.

(*NERPS*). The results suggest that the 2001 RPT measurement regulation might be effective in reducing earnings inflation via RPSs to some extent.

With regard to the price inflation proxies, there is a significant decrease in gross margin throughout the regulatory regimes. The mean and SD of ΔGM in the pre-regulation period is significantly higher than that of ΔGM in the post-regulation regime (PRE: mean = -0.005, SD = 0.125; POST: mean = -0.010, SD = 0.174). There is no significant change in the level of *EGM*, but the SD of *EGM* decreases.

Descriptive statistics of control variables used in this study by regulatory regimes are reported in Panel B. Compared with firms in the pre-regulation period, firms in the transitory period have higher *PPE*, *INTAN*, $\Delta INTAN$, *EXP*, *LEV*, and *BOARDIND*, but lower *MTB*, $\Delta SIZE$, *ROE* and *OWNCON*. Compared with firms in the pre-regulation period, firms in the post-regulation period have higher *PPE*, *INTAN*, *EXP*, *LEV*, ΔLEV, *SIZE*, and *BOARDIND*, but lower *MTB*, ΔPPE, $\Delta INTAN$, $\Delta SIZE$, *ROE* and *OWNCON*. The significant decrease in *OWNCON* and increase in *BOARDIND* across the regulatory regimes suggests increased emphasis on corporate governance mechanisms.

Table 5.4: Descriptive Statistics by Regulatory Regimes

VARIABLES	PRE (1999–2001) Mean	PRE (1999–2001) SD	TRAN (2002) Mean	TRAN (2002) SD	POST (2003–2005) Mean	POST (2003–2005) SD	T-Test TRAN - PRE	T-Test POST - PRE
Panel A Earnings Management Variables								
RPS/SALE	0.127	0.233	0.111	0.216	0.094	0.195	-1.551	**-5.280**
ΔRPS	-0.005	0.181	-0.009	0.169	-0.005	0.144	-0.393	0.070
AbsΔRPS	0.085	0.160	0.074	0.152	0.057	0.132	-1.586	**-5.957**
Positive ΔRPS	0.119	0.176	0.087	0.161	0.067	0.135	**-2.507**	**-6.262**
Negative ΔRPS	-0.120	0.180	-0.110	0.175	-0.076	0.153	0.769	**5.154**
PΔRPS	0.040	0.116	0.033	0.107	0.026	0.090	-1.418	**-4.199**
NΔRPS	-0.045	0.125	-0.041	0.120	-0.031	0.104	0.748	**3.887**
ERPS	0.000	0.229	0.000	0.212	0.000	0.192	-0.018	-0.019
AbsERPS	0.156	0.168	0.137	0.162	0.117	0.152	**-2.621**	**-8.504**
Positive ERPS	0.298	0.259	0.272	0.261	0.237	0.252	-1.140	**-4.224**
Negative ERPS	-0.106	0.067	-0.091	0.065	-0.078	0.060	**4.205**	**13.36**
PERPS	0.078	0.187	0.068	0.176	0.059	0.162	-1.195	**-3.893**
NERPS	-0.078	0.074	-0.068	0.068	-0.059	0.062	**2.973**	**9.954**
Gross Margin	0.253	0.161	0.242	0.149	0.217	0.184	**-2.365**	**-6.510**
ΔGM	-0.005	0.186	-0.009	0.174	-0.010	0.125	-0.273	**-2.425**
EGM	0.006	0.177	0.000	0.150	-0.004	0.142	-1.047	-0.993
Panel B Control Variables								
ΔCOGS	0.234	0.575	0.253	0.560	0.214	0.491	0.841	-1.295
MTB	1.695	0.627	1.420	0.471	1.157	0.326	**-10.15**	**-34.25**
PPE	19.475	1.180	19.676	1.232	19.827	1.387	**3.713**	**11.88**
ΔPPE	0.116	0.483	0.093	0.384	0.069	0.434	1.236	**-3.618**
INTAN	14.867	5.825	15.604	5.221	15.927	4.968	**2.772**	**8.174**
ΔINTAN	0.400	3.907	0.587	3.366	0.124	2.673	**1.236**	**-2.895**
EXP	0.054	0.067	0.063	0.078	0.059	0.072	**2.250**	**3.431**
LEV	0.447	0.195	0.498	0.230	0.560	0.336	**5.022**	**16.05**
ΔLEV	0.023	0.129	0.020	0.155	0.034	0.178	-0.550	**2.651**
SIZE	21.398	0.711	21.416	0.745	21.381	0.919	0.559	**3.324**
ΔSIZE	0.160	0.299	-0.066	0.203	-0.033	0.239	**-20.23**	**-24.97**
ROE	0.036	0.238	-0.005	0.267	-0.004	0.284	**-4.084**	**-6.434**
OWNCON	0.456	0.172	0.431	0.168	0.412	0.164	**-4.084**	**-8.255**
BORDIND	0.029	0.079	0.238	0.080	0.338	0.054	**62.92**	**150**

Note: This table presents the descriptive statistics of continuous variables and t-test of differences of these variables by regulatory regimes. The t-test of difference at 5% significance level is bolded. See Appendix Five for variable definitions.

The time trends of the level of earnings management proxies across the regulatory regimes are summarised in Table 5.5. To summarise the data, the regression of earnings management variables (*RPS/SALE*, *ΔRPS*, *AbsΔRPS*, *Positive ΔRPS*, *Negative ΔRPS*, *PΔRPS*, *NΔRPS*, *AbsERPS*, *Positive ERPS*, *Negative ERPS*, *PERPS*, *NERPS*, *Gross Margin*, *ΔGM*, *EGM*) is run on regulatory dummies (*TRAN*, *POST*). *TRAN* takes the value of '1' in the transitory period (year 2002) and '0' otherwise. *POST* takes the value of '1' in the post-regulation period (years 2003–2005) and '0' otherwise.

I choose this procedure to describe the variables because many RPS variables exhibit significant time trends. The purpose of these regressions is to examine whether the 2001 RPT measurement regulation has reduced the extent of earnings management. The constant of earnings management proxies in Table 5.5 must equal the mean value of these variables in the pre-regulation period in Table 5.4. For example, Table 5.5 shows that the constant for *RPS/SALE* is 0.127, which equals the mean value of *RPS/SALE* in the pre-regulation period in Table 5.4. The sum of the constant and coefficients of earnings management proxies on *TRAN* and *POST* in Table 5.5 must equal the mean values of these variables in *TRAN* and *POST* in Table 5.4. For example, the sum of the constant and the coefficient on *TRAN* for *RPS/SALE* is 0.111, which equals the mean value of *RPS/SALE* in the transitory period.

The results in Table 5.5 suggest the magnitude of *RPS/SALE* decreased significantly throughout the regulatory regimes. The coefficients on *AbsΔRPS* in the transitory and post-regulatory period are -0.011 and -0.028 respectively. The coefficients on *positive ΔRPS* (income-increasing RPSs) in the transitory and post-regulatory period are -0.032 and -0.052, while the coefficients on *negative ΔRPS* (income-decreasing RPSs) are 0.01

and 0.044. The results suggest that the magnitude of *Abs*Δ*RPS* decreased significantly throughout the regulatory regimes, with income-increasing RPSs contributing more to that decrease of *Abs*Δ*RPS* than income-decreasing RPSs. The coefficients on *P*Δ*RPS* and *N*Δ*RPS* are consistent with *positive* Δ*RPS* and *negative* Δ*RPS*.

I also provide evidence that the magnitude of *AbsERPS* declined significantly in the transitory and post-regulation period. The magnitudes (absolute value) of the coefficient for *Positive ERPS* in the transitory and post-regulation period are larger than the coefficient for *Negative ERPS*, suggesting that most of this decline results from the reduction of the *positive* industry-mean adjusted RPSs. The results for *PERPS* and *NERPS* are consistent with *Positive ERPS* and *Negative ERPS*. The decline of gross margin and Δ*GM* provides support for the reduction in price inflation after the passage of the 2001 RPT measurement regulation. However, there is no significant reduction in *EGM*. Overall, the results are consistent with the t-test of differences in Table 5.4.

Table 5.5: Descriptive Statistics of Earnings Management Proxies by Regimes

VARIABLES	N	CONSTANT	TRAN (2002)	POST (2003–2005)	Adj. R^2
RPS/SALE	4,611	0.127***	-0.016*	-0.033***	0.005
AbsΔRPS	4,611	0.085***	-0.011*	-0.028***	0.007
Positive ΔRPS	1,673	0.119***	-0.032***	-0.052***	0.022
Negative ΔRPS	1,800	-0.120***	0.01	0.044***	0.014
PΔRPS	4,611	0.040***	-0.007	-0.014***	0.003
NΔRPS	4,611	-0.045***	0.004	0.014***	0.003
AbsERPS	4,611	0.156***	-0.020***	-0.039***	0.012
Positive ERPS	1,174	0.298***	-0.026	-0.062***	0.011
Negative ERPS	3,437	-0.106***	0.015***	0.028***	0.039
PERPS	4,611	0.078***	-0.010	-0.020***	0.002
NERPS	4,611	-0.078***	0.010***	0.020***	0.017
Gross Margin	4,611	0.253***	-0.011	-0.036***	0.009
ΔGM	4,607	-0.005*	-0.004	-0.005***	0.001
EGM	4,611	0.006	-0.006	-0.010	0.000

Note: This table presents the change in the level of earnings management proxies across regulatory regimes using regression models. ***,**,* signify statistical significance of two-tailed tests at 1%, 5%, and 10% respectively. See Appendix Five for variable definitions.

5.3.3 Firm Characteristics by Related Party Sales

Firm characteristics by RPSs are reported in Table 5.6. Panel A in Table 5.6 compares firm characteristics of sample firms (RPS > 0 in one of sample years) with those never having RPSs (RPS = 0 in any sample year). The results show that a majority of firms had at least one RPS during the sample period (n =4611), making up 79.8% of the full sample observations. Consistent with Jian and Wong (2010), the results show that firms with RPSs have larger *SIZE* and lower *LEV* than firms with no RPSs. Further, firms having RPSs report higher *ROE*, *PPE* and *INTAN*, but there is a significant difference in *MTB* ratio. Regarding the corporate governance variables, the results show that firms with RPSs have a greater degree of ownership concentration, but there is no difference in board independence.

The frequency of RPS is presented in Panel B. For the sample firms with RPSs during the period 1998 to 2005, about 62.1% of the sample firms had more than five (over eight) times of RPSs, and about 24.6% of the sample had RPSs for each fiscal year. This indicates that RPSs are persistent and the manipulation of RPSs could be recurring. Firm characteristics by the frequency of RPSs are presented in Panel C. The results show that firms with a high frequency of RPSs (more than five times) tend to have higher *SIZE*, *ROE*, *PPE*, but lower *LEV*, *EXP* and *MTB* ratios than low frequency firms. The results also show that high frequency firms have a higher degree of ownership concentration.

Table 5.6: Firm Characteristics by RPS

Panel A Firm Characteristics by RPS

Variables	(1) RPS = 0 in any sample year (n = 1169) Mean	SD	(2) RPS > 0 in one of sample years (n = 4611) Mean	SD	T-Test (2) - (1)
MTB	1.426	0.586	1.426	0.555	0.043
PPE	19.502	1.301	19.654	1.290	**3.601**
INTAN	15.032	5.842	15.426	5.408	**2.191**
EXP	0.079	0.107	0.057	0.071	0.448
LEV	0.543	0.337	0.503	0.274	**-4.246**
SIZE	21.331	1.032	21.393	0.811	**2.193**
ROE	-0.005	0.300	0.013	0.263	**1.978**
OWNCON	0.265	0.198	0.433	0.170	**28.954**
BOARDIN	0.191	0.162	0.191	0.160	0.017

Panel B Frequency of RPS during 1998–2005

Number of RPS	1	2	3	4	5	6	7	8
Frequency of RPS (%)	8.90	10.32	10.30	8.35	9.35	12.28	15.90	24.59
Low v.s High Fre. (%)	37.87				62.13			

Panel C Firm Characteristics by the Frequency of RPS

Variables	Low Mean	SD	High Mean	SD	T-Test High-Low
MTB	1.522	0.626	1.386	0.494	**-8.396**
PPE	19.143	1.297	19.788	1.225	**17.155**
INTAN	15.402	5.310	15.125	5.703	-1.645
EXP	0.071	0.093	0.050	0.056	**-10.047**
LEV	0.539	0.310	0.471	0.241	**-8.502**
SIZE	21.127	0.787	21.434	0.802	**12.787**
ROE	-0.019	0.335	0.035	0.219	**6.707**
OWNCON	0.368	0.162	0.467	0.166	**19.841**
BOARDIN	0.188	0.162	0.193	0.160	0.918

Note:This table presents the descriptive statistics of firm characteristics and t-test of differences of these variables by RPSs. The t-test of difference at 5% significance level is bolded. See Appendix Five for variable definitions.

5.4 Correlation Tables

The Pearson correlation matrix for the dependent and independent variables used in the empirical models discussed in Chapter Four is presented in Table 5.7. This table only tabulates the results using the full sample. For brevity of presentation, the results based the sub-period analysis are not tabulated but have been checked. There are two reasons for examining the correlation matrix. First, it provides insights into the multicollinearity issue, caused by the high correlations among independent variables. In particular, this thesis is interested in the correlation between $P\Delta RPS_t$ and other control variables (Column 2), using the model (1a) defined in Section 4.1. There are no significant correlations between $P\Delta RPS_t$ and control variables. An examination of the correlation matrix reveals that the multicollinearity problem might not be an issue for the accuracy of the estimated coefficient on $P\Delta RPS_t$ using the model (1a).[36]

Second, examining the correlations between variables provides initial insights into the association between the dependent and test variables in this study. In particular, I do not find a significant correlation between $P\Delta RPS$ and ΔGM_t. However, it is important to note this is a full sample correlation table, and my hypothesis deals particularly with a pre- versus post-regulation analysis. For H2(a) and H2(b), I find a positive association between ΔRPS_t and ΔLEV_t ($p < 0.01$), and a positive association between $ERPS_t$ and $SIZE_{t-1}$ ($p < 0.01$).

[36] For the regressions in the next chapter, this thesis also employs the variance inflation factor (VIF) to detect the multicollinearity issues. VIF provides an index that measures how much the variance of an estimated regression coefficient is increased because of collinearity. As a rule of thumb, if any of the VIF values are greater than 5, there is a problem of multicollinearity (Wooldridge 2009). The max of VIF values of variables in the following regressions is 3.35 generated by the $INTAN_{t-1}$ in the model (1a). That is the only value greater than 3. Other values are ranging from 1 to 2. Overall, the VIF test does not indicate that the models in this study suffer multicollinearity problems.

Table 5.7: Pearson Correlation Matrix from 1999–2005

		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19
1	ΔRPS_t	1.00																		
2	$P\Delta RPS_t$	**0.71**	1.00																	
		0.00																		
3	$ERPS_t$	**0.34**	**0.52**	1.00																
		0.00	0.00																	
4	$PERPS_t$	**0.34**	**0.52**	**0.95**	1.00															
		0.00	0.00	0.00																
5	ΔGM_t	0.01	0.02	0.01	0.02	1.00														
		0.67	0.26	0.40	0.23															
6	EGM_t	0.00	-0.01	**-0.03**	-0.02	**0.45**	1.00													
		0.96	0.35	0.04	0.16	0.00														
7	GM_{t-1}	0.00	-0.02	**-0.04**	-0.02	**-0.29**	**0.61**	1.00												
		0.81	0.27	0.01	0.16	0.00	0.00													
8	ΔGM_{t-1}	-0.01	0.01	0.02	0.02	**-0.16**	**0.18**	**0.32**	1.00											
		0.62	0.48	0.21	0.12	0.00	0.00	0.00												
9	$\Delta COGS_{t-1}$	**-0.05**	-0.01	-0.02	-0.02	**-0.20**	0.00	**0.15**	**0.08**	1.00										
		0.00	0.49	0.18	0.10	0.00	0.90	0.00	0.00											
10	MTB_{t-1}	0.00	0.03	-0.03	-0.02	0.00	**0.09**	**0.12**	**0.07**	**0.10**	1.00									
		0.92	0.07	0.09	0.16	0.90	0.00	0.00	0.00	0.00										
11	PPE_{t-1}	-0.01	0.00	**0.08**	**0.10**	**-0.03**	**-0.03**	-0.01	**-0.03**	**-0.07**	**-0.45**	1.00								
		0.43	0.93	0.00	0.00	0.03	0.04	0.40	0.05	0.00	0.00									
12	ΔPPE_{t-1}	0.01	0.01	-0.02	-0.01	-0.03	**0.07**	**0.10**	0.03	**0.22**	**0.04**	**-0.09**	1.00							
		0.57	0.54	0.26	0.48	0.08	0.00	0.00	0.06	0.00	0.00	0.00								
13	$INTAN_{t-1}$	-0.02	-0.03	**-0.10**	**-0.11**	**-0.03**	0.00	**0.03**	**-0.05**	0.00	**-0.07**	**0.17**	-0.01	1.00						
		0.28	0.12	0.00	0.00	0.02	0.86	0.04	0.00	0.94	0.00	0.00	0.49							
14	$\Delta INTAN_{t-1}$	0.01	0.01	-0.01	0.00	-0.01	**0.03**	**0.05**	**0.04**	**0.03**	-0.01	-0.02	**0.11**	**-0.38**	1.00					
		0.40	0.57	0.71	0.76	0.33	0.04	0.00	0.02	0.04	0.51	0.22	0.00	0.00						

Table 5.7 continues

		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19
15	EXP_{t-1}	0.02	-0.02	**-0.14**	**-0.16**	**0.03**	**0.26**	**0.31**	-0.02	0.01	**0.07**	**-0.09**	**-0.05**	**0.13**	-0.02	1.00				
		0.15	0.06	0.00	0.00	0.03	0.00	0.00	0.31	0.35	0.00	0.00	0.00	0.00	0.13					
16	LEV_{t-1}	0.01	-0.02	**-0.10**	**-0.12**	**0.04**	**-0.17**	**-0.26**	0.00	**-0.07**	**-0.06**	**-0.08**	**-0.09**	**0.05**	**-0.04**	**0.10**	1.00			
		0.10	0.31	0.00	0.00	0.00	0.00	0.00	0.88	0.00	0.00	0.00	0.00	0.00	0.01	0.00				
17	ΔLEV_t	**-0.05**	-0.02	-0.02	-0.02	**-0.11**	**-0.13**	**-0.04**	**-0.09**	**0.15**	0.02	**-0.08**	**0.04**	0.00	**-0.03**	0.02	**-0.06**	1.00		
		0.00	0.18	0.11	0.14	0.00	0.00	0.00	0.00	0.00	0.20	0.00	0.00	0.91	0.02	0.13	0.00			
18	$SIZE_{t-1}$	-0.02	0.01	**0.07**	**0.07**	-0.02	**0.04**	**0.05**	0.00	**0.07**	**-0.26**	**0.66**	**0.15**	**0.13**	0.02	**-0.15**	**-0.11**	**-0.09**	1.00	
		0.30	0.65	0.00	0.00	0.13	0.00	0.00	0.98	0.00	0.00	0.00	0.00	0.00	0.11	0.00	0.00	0.00		
19	$\Delta SIZE_t$	-0.02	0.02	0.02	**0.03**	**0.08**	**0.14**	**0.11**	**0.07**	**0.21**	**-0.08**	-0.01	**0.23**	**-0.05**	**0.08**	**-0.07**	**-0.17**	**-0.08**	**0.27**	1.00
		0.30	0.12	0.28	0.05	0.00	0.00	0.00	0.00	0.00	0.00	0.41	0.00	0.00	0.00	0.00	0.00	0.00	0.00	

Note:

This table presents the Pearson correlations for the sample. Correlations significant at the 5 percent level in a two tailed test are in boldface. See Appendix 5 for variable definitions.

5.5 Chapter Summary

Section 5.2 first described the population of interest and the criteria used to select the sample. The sample of RPSs in total has 4,611 observations, counting for 79.8% of the whole population. It provided detailed characteristics of the sample dispersed across industries. The descriptive statistics of continuous variables in this study were provided in Section 5.3. Section 5.4 provided summary statistics of variables by regulatory regimes; there was a decline in the magnitude of earnings management proxies across the regulatory regimes. Section 5.5 presented the firm characteristics by regulatory regimes. The results revealed that firms with RPSs had larger *SIZE, ROE, PPE* and *INTAN* and *OWNCON* than firms with no RPSs. The results also provided evidence that RPSs were very prevalent and frequent in China. Finally, the correlation matrix for variables used in the regression models was presented.

Chapter 6: Results

6.1 Introduction

This chapter reports the results of the regressions that test the hypotheses developed in Chapters Two and Three. The regressions use the model described in Chapter Four and the data described in Chapter Five. The regressions for firms in the full sample (1999–2005), pre-regulation period (1999–2001), and the post-regulation period (2003–2005) are based on pooled-cross-sectional models.

Because pooled data are used in this thesis, heteroscedascity and autocorrelation might influence the ordinary least squares (OLS) results. I use White's general heteroscedascity test and the Wooldridge test identify heteroscedascity and autocorrelation in all the multivariate analyses reported in this chapter. Petersen (2005) suggests that when residuals of the same firm are serially correlated, using the clustered standard errors method provides an unbiased estimate of standard errors. This is because the clustered standard error corrects for the correlations of residuals within clusters, i.e., the unobserved firm effect residuals by estimating the covariance between residuals within clusters (Petersen 2005). Therefore, all p-values for the regression coefficients reported in this chapter are based on robust t-statistics that have been adjusted to control for clustering by firm. Because there is only one year for the sample in the transitory period (2001), a White's robust regression is employed.

The remainder of this chapter is organised as follows. Section 6.2 reports the regression results of the first hypothesis, which relates to the prevalence of price inflation in RPSs to prop up earnings, and the effectiveness of the 2001 RPT measurement regulation in

reducing price inflation in RPSs. Section 6.3 reports the results of the second hypothesis, which relates to the use of RPSs to beat regulatory thresholds and the regulatory impact on the extent of RPS management. Section 6.4 conducts further tests regarding the regulatory impact on the substitution effect between discretionary accruals and RPSs. Section 6.5 provides a summary.

6.2 Price Inflation in RPSs (H1, H1a, H1b)

This section presents the results of H1. Section 6.2.1 discusses the results based on the change model (3a) and Section 6.2.2 discusses the results based on the level model (3b).

6.2.1 The Change Model

H1 hypothesises that firms use income-increasing RPSs to inflate the transaction price. If so, there will be a positive coefficient on income-increasing RPSs ($P\Delta RPS_t$). H1a and H1b examine the effect of the 2001 RPT measurement regulation on price inflation in RPSs. If the income-increasing RPSs refer only to volumes inflation in the period post the 2001 RPT measurement regulation, there should be no significant relation between $P\Delta RPS_t$ and ΔGM_t. H1 is tested for the full sample period and each regulatory regime. The sample is divided into three regulatory regimes: the pre-regulation period (PRE, 2000–2002), the transition period (TRAN, 2003) and the post-regulation period (POST, 2003–2005). Table 6.1 presents the regression analysis of H1 based on the change model.

Table 6.1: The Use of RPS to Inflate Transaction Price
Dependent Variable is ΔGM_t

VARIABLES	PREDICTED SIGNS	Full (2000–2005)	PRE (2000–2001)	TRAN (2002)	POST (2003–2005)
$P\Delta RPS_t$	+	0.007	0.045**	0.042	-0.055
		(0.709)	(0.016)	(0.179)	(0.316)
GM_{t-1}	-	-0.276***	-0.264***	-0.300***	-0.272***
		(<0.001)	(<0.001)	(<0.001)	(<0.001)
ΔGM_{t-1}	-	-0.050	-0.064**	-0.052	-0.065
		(0.193)	(0.029)	(0.426)	(0.436)
$\Delta COGS_t$	-	-0.038***	-0.032***	-0.036***	-0.046***
		(<0.001)	(<0.001)	(<0.001)	(<0.001)
MTB_{t-1}	+	0.006	0.007	0.005	-0.001
		(0.298)	(0.145)	(0.549)	(0.963)
PPE_{t-1}	+	-0.001	0.001	-0.001	-0.001
		(0.797)	(0.816)	(0.890)	(0.783)
ΔPPE_t	+	0.014**	0.014*	0.009	0.014*
		(0.015)	(0.077)	(0.439)	(0.074)
$INTAN_{t-1}$	+	-0.001	-0.001	-0.001	-0.001
		(0.240)	(0.404)	(0.943)	(0.252)
$\Delta INTAN_t$	+	-0.001	-0.001	-0.001	0.001
		(0.695)	(0.219)	(0.268)	(0.427)
EXP_{t-1}	+	0.249***	0.201***	0.220***	0.291**
		(<0.001)	(<0.001)	(0.003)	(0.014)
LEV_{t-1}	?	-0.026	0.008	0.038	-0.039
		(0.138)	(0.573)	(0.104)	(0.125)
$SIZE_{t-1}$	?	-0.003	-0.009**	-0.017*	-0.001
		(0.324)	(0.048)	(0.080)	(0.750)
Constant		0.099*	0.242***	0.452***	-0.012
		(0.063)	(0.001)	(0.001)	(0.896)
IND		Y	Y	Y	Y
YEAR		Y	Y	N	Y
n		3,947	1,316	659	1,972
Adj. R^2		0.143	0.209	0.263	0.122

This table presents the results of the use of RPS to inflate the transaction price, based on the change model. ΔGM_t is the change in gross margin from year t-1 to year t, measured as $GrossProfit_t/SALE_t$ - $GrossProfit_{t-1}/SALE_{t-1}$. $P\Delta RPS_t$ is the income-increasing RPS, calculated as $RPS_t/SALE_t$ - $RPS_{t-1}/SALE_{t-1}$ when ($RPS_t/SALE_t$ - $RPS_{t-1}/SALE_{t-1}$) is positive and 0 otherwise. Other control variables are defined in the Appendix Five. All continuous variables are winsorised at the 1% and 99% levels. Two-tailed p-values are based on robust t-statistics that have been adjusted to control for the clustering by firm. ***,**,* signify statistical significance of two-tailed tests at 1%, 5%, and 10% respectively.

For the full sample analysis, I do not find a significant relationship between price manipulation proxy (ΔGM_t) and income-increasing RPSs ($P\Delta RPS_t$), indicating that overall during the sample period income-increasing RPS are not significantly associated with the increase in gross margin. For the period prior to the effect the 2001 RPT measurement regulation (2000–2001), the coefficient on $P\Delta RPS_t$ (*coeff* = 0.041, p = 0.016) is positive and significant at the 0.05 level. The results indicate that, in the period before the introduction of the new RPT regulation, income-increasing RPSs are largely associated with price inflation activities. For the transitory period and the post-regulation period, there is no significant association between $P\Delta RPS_t$ and ΔGM_t. The results suggest that after the introduction of the new regulation in 2001, income-increasing RPSs do not involve price inflation and refer purely to volumes inflation.

Consistent with the models of change in profitability in previous research (Fama &French 2000; Penman & Zhang 2002; MacVay 2006), ΔGM_t is negatively correlated with GM_{t-1} at the significance level of 0.01 in all periods. The coefficients on GM_{t-1} are negative, but only significant in the pre-regulation period. With regard to other control variables, there is a negative and significant coefficient on $\Delta COGS_t$ at 0.01 levels for all regulatory regimes. There is no significant association between MTB_{t-1} and ΔGM_t, suggesting that the past market-to-book value is not associated with the current change in *GM*. There is also no significant correlation between PPE_{t-1} and ΔGM_t, but a positive correlation between ΔPPE_t and ΔGM_t, with an exception for the sample in the transitory period. There is also no significant association between ΔGM_t, and either $\Delta INTAN_{t-1}$ or $INTAN_{t-1}$. Finally, the coefficients on EXP_{t-1} are positive and significant for each regulatory regime. The results indicate that the previous period's advertising, exhibition and other marketing expenditure have a positive effect on the current change in gross

margins, which are consistent with the prior marketing literature (Peles 1971; Thomas 1989).

Four supplementary analyses based on the change model (3a) are conducted to assess the robustness of the results reported in the main analysis. For brevity, Table 6.2 summarises the coefficients and *p*-values of the main testable variables. The detailed tests are reported in Appendices Six to Nine. Overall, the results of the main testable variables in the following robustness checks presented in Table 6.2 are consistent with the main analysis presented in Table 6.1. Further, the coefficients and *p*-values of control variables in the following robustness checks are consistent with those reported in Table 6.1, indicating that the model used in the main analysis is well specified.

First, the previous main analysis focused on the relationship between income-increasing RPSs and transfer pricing techniques. The first supplementary tests examines whether the actual change in RPSs (ΔRPS_t) can be used as an alternative to explain the transfer pricing behaviours.[37] If so, there should be a positive linear relationship between the actual change in RPSs and the change in gross margin. However, as presented in the Panel (1) of Table 6.2, there is no significant relationship between the change in RPSs and the change in gross margin. This might be because the linear relationship cannot be established between the *negative* change in RPSs and the change in gross margin. To provide further evidence regarding this issue, the income-decreasing RPS ($N\Delta RPS_t$) is included in the model (3a) that is reported in the Panel (2) of Table 6.2.

[37] ΔRPS_t is calculated as the proportion of RPSs to total sales revenues in current year less previous year.

Table 6.2: The Use of RPS to Inflate Transaction Price; Robustness Checks–Using the Change Model; Dependent Variable = ΔGMt

VARIABLES	FULL (2000–2005)	PRE (2000–2001)[a]	TRAN (2002)	POST (2003–2005)
(1) Using the actual change in *RPS* (ΔRPS_t)				
ΔRPS_t	-0.010	0.019	0.008	-0.035
	(0.373)	(0.186)	(0.797)	(0.169)
(2) Controlling for income-decreasing RPS ($N\Delta RPS_t$)				
$P\Delta RPS_t$	0.010	0.050***	0.046	-0.053
	(0.567)	(0.008)	(0.148)	(0.119)
$N\Delta RPS_t$	-0.026	-0.033	-0.032	-0.022
	(0.103)	(0.151)	(0.201)	(0.405)
(3) Excluding ΔGM_{t-1}				
$P\Delta RPS_t$	0.011	0.042**	0.040	-0.055
	(0.504)	(0.023)	(0.200)	(0.310)
(4) ROE ≥ thresholds of new equity offerings				
$P\Delta RPS_t$	0.052**	0.075***	0.086**	-0.016
	(0.047)	(<0.001)	(0.019)	(0.782)

This table presents the robustness checks of the use of RPS to inflate transaction price, based on the *change* model. Observations with sufficient data to calculate the dependent or independent variables are included. ΔGM_t is the change in gross margin from year t-1 to year t, measured as $GrossProfit_t/SALE_t$ - $GrossProfit_{t-1}/SALE_{t-1}$. $P\Delta RPS_t$ is the income-increasing RPS, calculated as $RPS_t/SALE_t$ - $RPS_{t-1}/SALE_{t-1}$ when ($RPS_t/SALE_t$ - $RPS_{t-1}/SALE_{t-1}$) is positive and 0 otherwise. $N\Delta RPS_t$ is the income-decreasing RPS, calculated as $RPS_t/SALE_t$ - $RPS_{t-1}/SALE_{t-1}$ when ($RPS_t/SALE_t$ - $RPS_{t-1}/SALE_{t-1}$) is negative and 0 otherwise. ΔRPS_t is the change in *RPS*/SALE from year t-1 to year t calculated as $RPS_t/SALE_t$ - $RPS_{t-1}/SALE_{t-1}$. Other control variables are defined in the Appendix Five. All continuous variables are winsorised at the 1% and 99% levels. Two-tailed p-values are based on robust t-statistics that have been adjusted to control for the clustering by firm. ***,**,* signify statistical significance of two-tailed tests at 1%, 5%, and 10% respectively.

[a] PRE is defined as the years 1999–2001 for the test (3) excluding ΔGM_{t-1}.

The income-decreasing RPS can be included in the model because firms with negative change in RPSs may differ systematically from firms with no change in RPSs. The variable $N\Delta RPS_t$ denotes income-decreasing RPS that is the negative change in *RPS/SALE* from year t-1 to year t, and 0 otherwise. The income-decreasing RPSs can be attributed to a reduction in RPS price, volumes or a combination. If the income-decreasing RPS is associated with the decrease in RPS price, there should be a negative association between income-decreasing RPS and the change in gross margin. If the income-decreasing RPS is only associated with the decrease in RPS volumes, there should be no significant association between income-decreasing RPS and the change in gross margin.

According to the results reported in the Panel (2) of Table 6.2, there is an insignificant correlation between income-decreasing RPSs and the price manipulation for each regulatory regime, suggesting that the income-decreasing RPSs primarily refer to volumes deflation. The results are also consistent with previous discussion that the linear relationship cannot be established between the negative change in RPSs and the change in gross margin. When adding the income-decreasing RPSs in model (3a), the coefficient on $P\Delta RPS_t$ is more positive and significant (*coeff* = 0.050, p = 0.008) in the period prior to the effect of the RPT regulation, than that in the main analysis presented in Section 6.1 (*coeff* = 0.041, p = 0.016).

In the third robustness check, the lagged ΔGM (ΔGM_{t-1}) is excluded from model (1a). The advantage of excluding ΔGM_{t-1} is that the sample size will increase, because observations in 1999 are included. This method includes every firm-year with necessary data to maximise the sample size and its representativeness. Consistent with the main analysis, the results present a significant and positive coefficient on $P\Delta RPS_t$ (*coeff* =

0.042, p = 0.023) in the pre-regulation period, and a negative but not significant coefficient (*coeff* = -0.057, p = 0.323) in the post-regulation period. The results are also consistent after the inclusion of observations in the year 1999.

Finally, this section also runs model (3a) in the sample where a firm's reported ROE is greater than the regulatory benchmarks of new equity offerings, which is consistent with Chen and Yuan (2004). The results show the coefficient on $P\Delta RPS_t$ (*coeff* = 0.075, $p <$ 0.001) in the pre-regulation period is more positive and significant than that of the main analysis as presented in Section 7.1 (*coeff* = 0.041, p = 0.016). I also find a positive and significant coefficient in the transitory period (*coeff* = 0.086, p = 0.019). Again, consistent with previous findings in the main analysis, the coefficient on $P\Delta RPS_t$ is negative and not significant in the post-regulation period.

6.2.2 The Level Model

The results of H1, based on the level model (3b), are presented in Table 6.3. The sample is divided into three regulatory regimes: the pre-regulation period (PRE, 2000–2002), the transition period (TRAN, 2003) and the post-regulation period (POST, 2003–2005). H1 is tested for the full sample and each regulatory regime. The dependent variable is the industry-mean adjusted *GM* (EGM_t), calculated as the difference between $GrossProfit_t/SALE_t$ for the firm and the industry-mean level of $GrossProfit_t/SALE_t$, excluding the own observation. The *ERPS* is decomposed into *PERPS* and *NEPRS*. This section examines whether the *level* of *EGM* is positively correlated with the *level* of *PERPS*.

Table 6.3: The Use of RPS to Inflate Transaction Price
Dependent Variable = EGM_t

VARIABLES	PREDICTED SIGNS	FULL (1999–2005)	PRE (1999–2001)	TRAN (2002)	POST (2003–2005)
$PERPS_t$	+	0.012	0.031***	0.031	-0.019
		(0.247)	(0.003)	(0.148)	(0.338)
EGM_{t-1}	+	0.694***	0.703***	0.686***	0.701***
		(<0.001)	(<0.001)	(<0.001)	(<0.001)
$\Delta COGS_t$	-	-0.035***	-0.030***	-0.037***	-0.044***
		(<0.001)	(<0.001)	(<0.001)	(<0.001)
MTB_{t-1}	+	0.007	0.010**	0.004	-0.001
		(0.134)	(0.042)	(0.660)	(0.933)
PPE_{t-1}	+	-0.002	-0.001	-0.004	-0.003
		(0.473)	(0.928)	(0.600)	(0.411)
$INTAN_{t-1}$	+	-0.001	-0.001	0.001	-0.001
		(0.216)	(0.457)	(0.545)	(0.138)
EXP_{t-1}	+	0.290***	0.274***	0.228***	0.308**
		(<0.001)	(<0.001)	(0.005)	(0.029)
LEV_{t-1}	?	-0.030*	-0.002	0.036	-0.043
		(0.074)	(0.858)	(0.151)	(0.109)
$SIZE_{t-1}$	?	0.001	-0.004	-0.015	0.002
		(0.966)	(0.376)	(0.124)	(0.721)
Constant		-0.006	0.063	0.357***	-0.041
		(0.912)	(0.352)	(0.010)	(0.675)
IND		Y	Y	Y	Y
YEAR		Y	Y	N	Y
n		4,606	1975	659	1,972
Adj. R^2		0.483	0.584	0.532	0.392

This table presents the results of the use of RPS to inflate the transaction price, based on the *level* model. EGM_t is the difference between $GrossProfit_t/SALE_t$ for the firm and the industry-mean level of $GrossProfit_t/SALE_t$ excluding the own observation for which I calculate the measure. *ERPS* is the difference between $RPS_t/SALE_t$ for firm and the industry-mean level of $RPS_t/SALE_t$ excluding the own observation for which I calculate the measure. *PERPS* is the positive *ERPS* when *ERPS* is positive and 0 otherwise. Other control variables are defined in the Appendix Five. All continuous variables are winsorised at the 1% and 99% levels. Two-tailed p-values are based on robust t-statistics that have been adjusted to control for the clustering by firm. ***,**,* signify statistical significance of two-tailed tests at 1%, 5%, and 10% respectively.

For the full sample analysis in column (1), the results do not provide a significant relationship between price inflation proxy (EGM_t) and positive *ERPS* ($PERPS_t$) that is consistent with the change model. However, for the period prior to the effect the 2001 RPT measurement regulation, the coefficient on $PERPS_t$ (*coeff* = 0.031, p = 0.003) is positive and significant at the 0.01 level. For the post-regulation period, the association between $PERPS_t$ and EGM_t is negative and not significant. Consistent with the analysis in the change model, the level model provides further evidence that in the period before the introduction of the new RPT regulation, RPSs are associated with price inflation. However, after the effect of the 2001 RPT measurement regulation, the price inflation in RPSs becomes not significant.

With regard to other control variables, EGM_t is persistent. Note that the coefficients on EGM_{t-1} range from 0.686 to 0.703. As predicted, the coefficients on $\Delta COGS_t$ are negative and significant at 0.01 levels for the full sample and each regulatory regime. The association between MTB_{t-1} and EGM_t is not significant, indicating that the past market-to-book value is not associated with the current level of *GM*. There is no significant relationship between relationship between PPE_{t-1} and EGM_t and between $INTAN_{t-1}$ and EGM_t. For the full sample, the variable LEV_{t-1} is negatively associated with EGM_t. The coefficients on EXP_{t-1} are positive and significant for each regulatory regime, indicating that the past advertising expenditure had a positive effect on the current level of gross margin.

Three supplementary analyses, based on the change model (3b), are conducted to assess the robustness of the results reported in the main analysis. Table 6.4 summarises the coefficients and p-values of the main testable variables. The results of the coefficients on the main testable variables in the pre-regulation period are robust when using the

actual change in RPS (*coeff* = 0.022, p = 0.011), controlling for negative *ERPS* (*coeff* = 0.041, p = 0.001), and using the sample with firms that beat the regulatory benchmarks of new equity offerings (*coeff* = 0.067, p <0.001). Consistent with the main analysis presented in Table 6.3, the coefficients on *ERPS* in post-regulation period are not significant. In sum, the pattern of statistical and economic significance for the coefficients of the test and control variables in the robustness checks is consistent with patterns in the previous analysis using the level model. The detailed tests are reported in Appendices Ten to Twelve.

Table 6.4: The Use of RPS to Inflate Transaction Prices; Robustness Checks Using the Level Model; Dependent Variable = $ABGM_t$

VARIABLES	FULL (1999–2005)	PRE (1999–2001)	TRAN (2002)	POST (2003–2005)
(1) Using industry-mean adjusted *RPS* ($ERPS_t$)				
$ERPS_t$	0.007	0.022**	0.018	-0.018
	(0.398)	(0.011)	(0.430)	(0.276)
(2) Controlling for negative ERPS ($NERPS_t$)				
$PERPS_t$	0.021*	0.041***	0.058**	-0.008
	(0.097)	(0.001)	(0.031)	(0.746)
$NERPS_t$	-0.045	-0.051	-0.137*	-0.058
	(0.163)	(0.168)	(0.087)	(0.245)
(3) ROE ≥ thresholds of new equity offerings				
$PERPS_t$	0.050***	0.067***	0.073***	0.016
	(<0.001)	(<0.001)	(0.009)	(0.646)

This table presents the robustness checks of the use of RPS to inflate transaction price, based on the level model. All observations with sufficient data to calculate the dependent or independent variables are included. EGMt is the difference between GrossProfitt/SALEt for firm i and the industry-mean level of GrossProfitt/SALEt excluding the own observation for which I calculate the measure. ERPS is the difference between RPSt/SALEt for firm i and the industry-mean level of RPSt/SALEt excluding the own observation for which I calculate the measure. PERPS is the positive ERPS when ERPS is positive and 0 otherwise. NERPS is the negative ERPS when ERPS is negative and 0 otherwise. Other control variables are defined in the Appendix Five. All continuous variables are winsorised at the 1% and 99% levels. Two-tailed p-values are based on robust t-statistics that have been adjusted to control for the clustering by firm. ***,**,*Signify statistical significance of two-tailed tests at 1%, 5%, and 10% respectively.

To summarise the previous discussion, both the change and level tests support H1a and H1b. The results suggest that transfer pricing techniques via RPSs were widely used to inflate earnings before the introduction of the new RPT regulation. After the effect of the 2001 RPT measurement regulation, price inflation largely disappeared, suggesting that these income-increasing RPSs referred mainly to volumes inflation. The results indicate that the 2001 RPT measurement regulation has been somewhat effective in reducing price inflation in RPSs.

6.2.3 Alternative measure

In this section, I re-test H1 by using related party purchases (RPPs) as an alternative mechanism for propping. The parent firm might grant more purchase discounts to listed firms, to reduce their cost of goods sold. Because the 2001 RPT measurement regulation only restricts income-increasing RPSs, I am further motivated to examine whether firms alternatively understate the purchase price of RPPs to inflate earnings in the period post to the effect of the 2001 RPT measurement regulation.

Similar to RPSs, the change in RPPs (ΔRPP_t) is decomposed into a positive change in RPPs ($P\Delta RPP_t$), used as the proxy for income-decreasing RPPs, and a negative change in RPPs ($N\Delta RPP_t$), used as the proxy for income-increasing RPPs. I focus on the relation between the change in GM and the *negative* change in RPPs. If listed firms deflate the purchase price via income-increasing RPPs, there should be a *negative* association between the change in gross margin and income-increasing RPS. In the further analysis, the level of industry-mean adjusted RPP ($ERPP_t$) is also decomposed into positive ERPP ($PERPP_t$) and negative ERPP ($NERPP_t$). I conduct a level test by examining the association between EGM_t and $NERPP_t$. I replace $P\Delta RPS_t$ and $PERPS_t$

with $N\Delta RPP_t$ and $NERPP_t$ respectively in models (3a) and (3b). I also replace $\Delta COGS_t$ with $\Delta SALE_t$. The models used to test price inflation in RPPs are stated in Equations (10a) and (10b):

$$\Delta GM_t = f\begin{pmatrix}\boldsymbol{N\Delta RPP_t}, GM_{t-1}, \Delta GM_{t-1}, \Delta SALE_t, MTB_{t-1}, PPE_{t-1}, \Delta PPE_t, \\ INTAN_{t-1}, \Delta INTAN_t, EXP_{t-1}, LEV_{t-1}, SIZE_{t-1}, IND, YEAR\end{pmatrix} \quad (10a)$$

$$EGM_t = f\begin{pmatrix}\boldsymbol{NERPP_t}, EGM_{t-1}, \Delta SALE_t, MTB_{t-1}, PPE_{t-1} \\ INTAN_{t-1}, EXP_{t-1}, LEV_{t-1}, SIZE_{t-1}, IND, YEAR\end{pmatrix} \quad (10b)$$

Where:

ΔGM_t	=	the change in gross margin from year t-1 to year t, measured as $GrossProfit_t/SALE_t$ - $GrossProfit_{t-1}/SALE_{t-1}$.
EGM_t	=	the difference between $GrossProfit_t/SALE_t$ for firm *i* and the industry-mean level of $GrossProfit_t/SALE_t$ calculated omitting firm *i*.
$N\Delta RPP_t$	=	the negative change in RPP from year t-1 to year t, calculated as $RPP_t/SALE_t$ - $RPP_{t-1}/SALE_{t-1}$, when ($RPP_t/SALE_t$ - $RPP_{t-1}/SALE_{t-1}$) is negative and 0 otherwise.
$NERPP_t$	=	the negative difference between $RPP_t/SALE_t$ for firm i and the industry-mean level of $RPP_t/SALE_t$ excluding the own observation for which I calculate the measure and 0 otherwise.
GM_{t-1}	=	gross margin measured as $GrossProfit_t/SALE_t$ in year t-1.
ΔGM_{t-1}	=	the change in gross margin from year t-2 to year t-1 .
$\Delta SALE_t$	=	the change in cost of goods sold from year t-1 to year t, calculated as $(SALE_t - SALE_{t-1})/SALE_{t-1}$.
MTB_{t-1}	=	the lagged market-to-book ratio.
PPE_{t-1}	=	the log form of PPE in year t-1.
ΔPPE_t	=	the change in the log form of *PPE* from year t-1 to year t.
$INTAN_{t-1}$	=	the log form of intangible assets (*INTAN*) in year t-1.
$\Delta INTAN_t$	=	the change in the log form of intangible assets from year t-1 to year t.
EXP_{t-1}	=	the lagged selling expenses (*EXP*), calculated as $EXP_{t-1}/SALE_{t-1}$.
LEV_{t-1}	=	the long-term debt deflated by total assets in year t-1.
$SIZE_{t-1}$	=	the log form of market value in year t-1.
IND	=	indicator variables for industry sector membership.
YEAR	=	indicator variables for each year.

The results of the purchase price deflation in RPPs based on the change model are presented in Table 6.5. I do not find a strong negative association between ΔGM_t and $N\Delta RPP_t$ in any regulatory regime. However, turning to the level associations presented in Table 6.6, there is a significant and negative relation between ΔGM_t and $NERPS_t$ in all regulatory regimes, indicating that firms might deflate the purchase price of RPPs to

inflate earnings. More importantly, the extent of the coefficient on $NERPS_t$ in the post-regulation period (*coeff* = -0.240, p = 0.010) is greater than that in the pre-regulation period (*coeff* = -0.130, p = 0.001). The results indicate that firms might increase the use of income-increasing RPPs to deflate the purchase price. In summary, the change and level models provide conflicting results regarding the use of income-increasing RPPs to prop up earnings. Because the change model is supposed to be more persuasive than the cross-sectional model, the results should be interpreted as lack of robustness.

Table 6.5: The Use of RPP to Deflate the Purchase Price

Dependent Variable = ΔGM_t

VARIABLES	PREDICTED SIGNS	FULL (2000–2005)	PRE (2000–2001)	TRAN (2002)	POST (2003–2005)
$P\Delta RPP_t$	-	0.002	0.004	0.016	-0.011
		(0.930)	(0.845)	(0.620)	(0.686)
GM_{t-1}	-	-0.293***	-0.282***	-0.339***	-0.291***
		(<0.001)	(<0.001)	(<0.001)	(<0.001)
ΔGM_{t-1}	-	-0.054	-0.074**	-0.047	-0.060
		(0.152)	(0.020)	(0.555)	(0.463)
$\Delta SALE_t$	+	0.001	0.004	-0.001	-0.004
		(0.925)	(0.579)	(0.923)	(0.771)
MTB_{t-1}	+	0.003	0.006	0.004	-0.001
		(0.510)	(0.246)	(0.683)	(0.942)
PPE_{t-1}	+	0.000	0.002	0.002	-0.001
		(0.987)	(0.578)	(0.809)	(0.820)
ΔPPE_t	+	0.007	0.006	0.003	0.008
		(0.242)	(0.396)	(0.810)	(0.354)
$INTAN_{t-1}$	+	-0.001	-0.001	-0.001	-0.001
		(0.233)	(0.317)	(0.886)	(0.330)
$\Delta INTAN_t$	+	-0.001	-0.001	-0.001	0.001
		(0.703)	(0.248)	(0.373)	(0.494)
EXP_{t-1}	+	0.249***	0.204***	0.257***	0.285**
		(<0.001)	(0.001)	(0.002)	(0.014)
LEV_{t-1}	?	-0.023	0.009	0.027	-0.035
		(0.195)	(0.525)	(0.252)	(0.180)
$SIZE_{t-1}$	?	-0.004	-0.009*	-0.019*	-0.001
		(0.317)	(0.051)	(0.056)	(0.813)
Constant		0.089*	0.225***	0.459***	-0.028
		(0.099)	(0.003)	(0.001)	(0.753)
IND		Y	Y	Y	Y
YEAR		Y	Y	N	Y
n		3,947	1,316	659	1,972
Adj. R^2		0.118	0.178	0.229	0.094

This table presents the results of the use of RPP to deflate the purchase price, based on the change model. Observations with sufficient data to calculate the dependent or independent variables are included. ΔGM_t is the change in gross margin from year t-1 to year t, measured as $GrossProfit_t/SALE_t$ - $GrossProfit_{t-1}/SALE_{t-1}$. $N\Delta RPS_t$ is the income-increasing RPP, calculated as $RPP_t/SALE_t$ - $RPP_{t-1}/SALE_{t-1}$ when ($RPP_t/SALE_t$ - $RPP_{t-1}/SALE_{t-1}$) is negative and 0 otherwise. Other control variables are defined in the Appendix Five. All continuous variables are winsorised at the 1% and 99% levels. Two-tailed p-values are based on robust t-statistics that have been adjusted to control for the clustering by firm. ***,**,* signify statistical significance of two-tailed tests at 1%, 5%, and 10% respectively.

Table 6.6: The Use of RPP to Deflate the Purchase Price
Dependent Variable = EGM_t

VARIABLES	PREDICTED SIGNS	FULL (1999–2005)	PRE (1999–2001)	TRAN (2002)	POST (2003–2005)
$PERPP_t$	-	-0.172***	-0.130***	-0.249**	-0.240***
		(<0.001)	(0.010)	(0.015)	(0.001)
EGM_{t-1}	-	0.708***	0.670***	0.645***	0.781***
		(<0.001)	(<0.001)	(<0.001)	(<0.001)
$\Delta SALE_t$	+	0.002	0.007	-0.001	-0.006
		(0.716)	(0.261)	(0.975)	(0.598)
MTB_{t-1}	+	-0.002	0.003	-0.001	-0.009
		(0.781)	(0.555)	(0.901)	(0.570)
PPE_{t-1}	+	-0.001	-0.001	-0.008	-0.002
		(0.678)	(0.893)	(0.361)	(0.606)
$INTAN_{t-1}$	+	-0.001	-0.001	0.001	-0.001
		(0.124)	(0.185)	(0.560)	(0.287)
EXP_{t-1}	+	0.243***	0.293***	0.247**	0.170**
		(<0.001)	(<0.001)	(0.018)	(0.014)
LEV_{t-1}	?	-0.028	-0.011	0.014	-0.033
		(0.185)	(0.462)	(0.597)	(0.307)
$SIZE_{t-1}$	?	0.001	-0.002	-0.008	0.001
		(0.985)	(0.706)	(0.501)	(0.964)
Constant		-0.015	0.020	0.272*	-0.022
		(0.774)	(0.775)	(0.078)	(0.777)
IND		Y	Y	Y	Y
YEAR		Y	Y	N	Y
n		4,606	1,975	659	1,972
Adj. R^2		0.480	0.559	0.536	0.427

This table presents the results of the use of RPP to deflate the purchase price, based on the level model. All observations with sufficient data to calculate the dependent or independent variables are included. EGM_t is the difference between $GrossProfit_t/SALE_t$ for the firm and the industry-mean level of $GrossProfit_t/SALE_t$ excluding the own observation for which I calculate the measure. *ERPP* is the difference between $RPP_t/SALE_t$ for firm i and the industry-mean level of $RPP_t/SALE_t$ excluding the own observation for which I calculate the measure. $NERPP_t$ is the negative *ERPP* when *ERPP* is negative and 0 otherwise. Other control variables are defined in the Appendix Five. All continuous variables are winsorised at the 1% and 99% levels. Two-tailed p-values are based on robust t-statistics that have been adjusted to control for the clustering by firm. ***,**,* signify statistical significance of two-tailed tests at 1%, 5%, and 10% respectively.

6.3 Using RPS to Beat Regulatory Thresholds (H2a, H2b)

H2a relates to whether RPSs are widely used by firms to beat the regulatory thresholds of new equity offering, and avoid delisting. H2a predicts that the extent of RPS manipulation is higher for firms with a propensity to use RPSs to meet or beat the regulatory thresholds of new equity offerings and delisting than other firms. I run the regression of earnings management proxies (ΔRPS_t and $ERPS_t$) on incentive variables ($SUSPECT_t$ and ST_t) and several control variables. If firms manipulate RPSs to beat the regulatory thresholds of new equity offerings and delisting, the coefficients on ΔRPS_t and $ERPS_t$ are expected to be positive. To investigate the effectiveness of 2001 RPT regulations in reducing earnings management via RPSs, the sample is divided into three regulatory regimes: the pre-regulation period, the transition period and the post-regulation period. H2a are tested for each of these regulatory regimes.

6.3.1 The Change Model

The multivariate analysis of H2a, using the change model, is summarised in Table 6.7. The coefficients on $SUSPECT_t$ are positive and significant for each regulatory period at 0.01 significance levels, suggesting that the extent of earnings management via RPSs is significantly greater for firms with incentives to beat the regulatory thresholds of new equity issuance than other firms. The results are also significant in the post-regulation period (2003–2005), suggesting that the 2001 RPT regulation might not be fully successful in eliminating the use of RPS to beat ROE thresholds of new equity offerings. However, the coefficients on $SUSPECT_t$ decline gradually across regulatory regimes, suggesting that the 2001 RPT measurement regulation has been somewhat effective in reducing earnings management via RPSs.

The coefficients on ST_t are also statistically significant at 0.01 levels for each regulatory period, providing evidence that RPSs are used to avoid delisting even in the period post the 2001 RPT measurement regulation. The coefficient on ST_t in the transitory period (*coeff* = 0.327) is higher than that in the pre-regulation period (*coeff* = 0.249), suggesting that in the period just after the passage of the new RPT regulation, the extent of manipulated RPSs increased for *ST* firms. However, *ST* firms used less RPSs in the post-regulation period (*coeff* = 0.228) when compared to those firms in the pre-regulation period (*coeff* = 0.249).

With respect to other explanatory variables, the results provide evidence that ΔRPS_{t-1} is negatively correlated with RPS_{t-1} and ΔRPS_{t-1} at the significance level of 0.01 for each regulation period. The change in RPSs (ΔPRS_t) is negatively correlated with the change in size ($\Delta SIZE_t$) at a 0.1 significance level, when using the full sample (*coeff* = -0.017, p = 0.088), and using the sample in the post-regulation period (*coeff* = -0.023, p = 0.071). The change in RPSs (ΔPRS_t) is positively associated with the lagged market-to-book ratio (ΔMTB_{t-1}) at the 0.1 level, when using the sample in the post-regulation period (*coeff* = -0.015, p = 0.052).

Table 6.7: Earnings Management Incentive; Dependent Variable = ΔRPS_t

VARIABLES	PREDICTED SIGNS	FULL (2000–2005)	PRE (2000–2001)	TRAN (2002)	POST (2003–2005)
$SUSPECT_t$	+	0.234***	0.276***	0.235***	0.186***
		(<0.001)	(<0.001)	(<0.001)	(<0.001)
ST_t	+	0.258***	0.249***	0.327***	0.228***
		(<0.001)	(<0.001)	(<0.001)	(<0.001)
RPS_{t-1}	-	-0.294***	-0.312***	-0.319***	-0.263***
		(<0.001)	(<0.001)	(<0.001)	(<0.001)
ΔRPS_{t-1}	-	-0.110***	-0.113***	-0.040	-0.142***
		(<0.001)	(0.006)	(0.417)	(<0.001)
$\Delta SIZE_t$	?	-0.017*	-0.010	-0.019	-0.023*
		(0.088)	(0.596)	(0.658)	(0.071)
ΔLEV_t	?	-0.028	-0.023	-0.065	-0.026
		(0.156)	(0.386)	(0.162)	(0.339)
MTB_{t-1}	?	-0.006	-0.009	0.009	-0.015*
		(0.162)	(0.138)	(0.349)	(0.052)
Constant		-0.005	0.019	-0.033	-0.021
		(0.630)	(0.448)	(0.221)	(0.367)
IND		Y	Y	Y	Y
YEAR		Y	Y	N	Y
n		3,950	1,318	660	1,972
Adj. R^2		0.373	0.398	0.436	0.329

This table reports regression results of whether firms inflate RPSs when there are earnings management incentives, based on the change model. ΔRPS_t is the change in *RPS/SALE* from year t-1 to year t, calculated as $RPS_t/SALE_t$ - $RPS_{t-1}/SALE_{t-1}$. RPS_{t-1} is defined as $RPS_{t-1}/SALE_{t-1}$. $SUSPECT_t$ takes 1 if ROE_t is more than the regulatory thresholds of new equity offerings but $PROE_t$ is less than the regulatory threshold and 0 otherwise. ST_t takes 1 if if ROE_t is positive and less than the regulatory thresholds of new equity offerings but $PROE_t$ is negative and 0 otherwise. Other control variables are defined Appendix One. All continuous variables are winsorised at the 1% and 99% levels. Two-tailed p-values are based on robust t-statistics that have been adjusted to control for the clustering by firm. ***,**,*Signify statistical significance of two-tailed tests at 1%, 5%, and 10% respectively.

Several supplementary tests are conducted, based on the model (5a), to examine the robustness of the previous main analysis. For brevity, Table 6.8 summarises the coefficients and *p*-values of the main testable and control variables. All the main results on earnings management incentive variables ($SUSPECT_t$ and ST_t) remain qualitatively the same. The detailed results are reported in Appendices Thirteen to Sixteen.

Table 6.8: Earnings Management Incentive; Robustness Checks–Using the Change Model; Dependent Variable = ΔRPS_t

VARIABLES	FULL (2000–2005)	PRE (2000–2001)[a]	TRAN (2002)	POST (2003–2005)
(1) $\Delta RPS > 0$				
$SUSPECT_t$	0.154***	0.177***	0.137***	0.129***
	(<0.001)	(<0.001)	(<0.001)	(<0.001)
ST_t	0.188***	0.154***	0.251***	0.169***
	(<0.001)	(0.007)	(<0.001)	(<0.001)
(2) ROE ≥ thresholds of new equity offerings				
$SUSPECT_t$	0.238***	0.284***	0.229***	0.187***
	(<0.001)	(<0.001)	(<0.001)	(<0.001)
(3) Controlling for ROE				
$SUSPECT_t$	0.234***	0.276***	0.233***	0.188***
	(<0.001)	(<0.001)	(<0.001)	(<0.001)
ST_t	0.259***	0.249***	0.327***	0.228***
	(<0.001)	(<0.001)	(<0.001)	(<0.001)
(4) Excluding ΔRPS_{t-1}				
$SUSPECT_t$	0.248***	0.281***	0.235***	0.193***
	(<0.001)	(<0.001)	(<0.001)	(<0.001)

This table reports robustness checks of whether firms inflate RPSs when there are earnings management incentives, based on the change model. ΔRPS_t is the change in *RPS/SALE* from year t-1 to year t, calculated as $RPS_t/SALE_t$ - $RPS_{t-1}/SALE_{t-1}$. RPS_{t-1} is defined as $RPS_{t-1}/SALE_{t-1}$. $SUSPECT_t$ takes 1 if ROE_t is more than the regulatory thresholds of new equity offerings but $PROE_t$ is less than the regulatory thresholds and 0 otherwise. ST_t takes 1 if if ROE_t is positive but less than the regulatory thresholds of new equity offerings and $PROE_t$ is negative and 0 otherwise. Other control variables are defined Appendix Five. All continuous variables are winsorised at the 1% and 99% levels. Two-tailed p-values are based on robust t-statistics that have been adjusted to control for the clustering by firm. ***,**,* signify statistical significance of two-tailed tests at 1%, 5%, and 10% respectively.

[a] PRE refers to years 1999-2001 for the test excluding ΔRPS_{t-1}

First, because H2a deals with firms attempting to increase their reported earnings to beat regulatory benchmarks, I focus particularly on the sample of observations that report positive change in RPSs only ($\Delta RPS > 0$). Not surprisingly, there is a decline in the magnitude of the coefficients on $SUSPECT_t$ and ST_t in comparison with the previous analysis presented in Table 6.7, but the statistical significance presented in Panel (1) of Table 6.8 remains the same.

Second, the main analysis presented in Table 6.7 compares the extent of earnings management activity for firms that do not satisfy the regulatory thresholds of new equity offerings without RPS manipulation to other firms in the sample. In this section, I examine whether the level of RPS manipulation is abnormally high for firms that do not satisfy the regulatory thresholds of new equity offerings without RPS manipulation than firms satisfying the regulatory thresholds. Consistent with the previous main analysis presented in Table 6.7, the coefficients on $SUSPECT_t$ are statistically significant.

Third, as the measures of $SUSPECT_t$ and ST_t are based on ROE benchmarks, ROE is included in model (2a) to investigate whether the presence of ROE has squeezed out the effect of earnings management incentives. The results show the coefficients on $SUSPECT_t$ and ST_t after controlling for ROE in the model.

Final, the lagged ΔRPS (ΔRPS_{t-1}) is excluded from model (2a) to include the observations from 1999 and make full use of the sample. Consistent with previous findings, the coefficients on $SUSPECT_t$ and ST_t are positive and significant at 0.01 levels.

6.3.2 The Level Model

The regression results based on industry cross-sectional models are reported in Table 6.9. The dependent variable is $ERPS_t$. The results provide evidence that *SUSPECT* and *ST* firms report significantly higher levels of industry-mean adjusted RPSs than other firms for each regulation period. This suggests that listed firms prop up earnings via RPSs to beat the regulatory thresholds of new equity offerings and delisting.

Further, the coefficient on $SUSPECT_t$ in the post-regulation period (*coeff* = 0.246, $p < 0.001$) is less than that in the pre-regulation period (*coeff* = 0.373, $p < 0.001$). This indicates that *SUSPECT* firms used less RPSs to beat the regulatory thresholds in the post-regulation period than firms in the pre-regulation period. A similar pattern is also found for *ST* firms. Specifically, the coefficient on ST_t in the post-regulation period (*coeff* = 0.253, $p < 0.001$) is less than that in the pre-regulation period (*coeff* = 0.361, $p < 0.001$).

The coefficients on $ERPS_{t-1}$ are positive and significant for all regulatory regimes. The results show that ERPSs are very persistent. Note that the coefficient on $ERPS_{t-1}$ ranges from 0.335 to 0.506. The coefficient on $ERPS_{t-1}$ in the post-regulatory regime (*coeff* = 0.506, $p < 0.001$) is higher than that in the pre-regulatory regime (*coeff* = 0.392, $p < 0.001$), suggesting that the persistence of RPSs increases across these two regulatory regimes. With regard to other control variables, the coefficient on LEV_t in the transitory period (*coeff* = -0.055, $p = 0.012$) is negative and significant. The results also suggest negative and significant coefficients on MTB_{t-1} in the full sample period (*coeff* = -0.007, $p = 0.051$), the pre-regulation period (*coeff* = -0.011, $p = 0.013$) and the post-regulation period (*coeff* = -0.0157, $p = 0.042$).

Table 6.9: Earnings Management Incentive; Dependent Variable = $ERPS_t$

VARIABLES	PREDICTED SIGNS	FULL (1999–2005)	PRE (1999–2001)	TRAN (2002)	POST (2003–2005)
$SUSPECT_t$	+	0.322***	0.373***	0.352***	0.246***
		(<0.001)	(<0.001)	(<0.001)	(<0.001)
ST_t	+	0.318***	0.361***	0.405***	0.253***
		(<0.001)	(<0.001)	(<0.001)	(<0.001)
$ERPS_{t-1}$	+	0.431***	0.392***	0.335***	0.506***
		(<0.001)	(<0.001)	(<0.001)	(<0.001)
$SIZE_t$	?	-0.001	0.006	0.002	-0.005
		(0.592)	(0.243)	(0.743)	(0.101)
LEV_t	?	-0.011	-0.019	-0.055**	-0.006
		(0.130)	(0.232)	(0.012)	(0.478)
MTB_{t-1}	?	-0.007*	-0.011**	0.011	-0.015**
		(0.051)	(0.013)	(0.197)	(0.042)
Constant		-0.009	-0.159	-0.063	0.099
		(0.882)	(0.132)	(0.670)	(0.210)
IND		Y	Y	Y	Y
YEAR		Y	Y	N	Y
n		4,607	1,975	660	1,972
Adj. R^2		0.682	0.708	0.723	0.648

This table reports the results of whether firms inflate RPSs when there are earnings management incentives, using the level model. All observations with sufficient data to calculate the dependent or independent variables are included. $ERPS_t$ is the difference between $RPS_t/SALE_t$ for firm i and the industry-mean level of $RPS_t/SALE_t$ excluding the own observation for which I calculate the measure. $SUSPECT_t$ takes 1 if ROE_t is more than the regulatory thresholds of new equity offerings but $PROE_t$ is less than the regulatory thresholds and 0 otherwise. ST_t takes 1 if if ROE_t is positive but less than the regulatory thresholds of new equity offerings and $PROE_t$ is negative and 0 otherwise. Other control variables are defined Appendix One. All continuous variables are winsorised at the 1% and 99% levels. Two-tailed p-values are based on robust t-statistics that have been adjusted to control for the clustering by firm. ***,**,*Signify statistical significance of two-tailed tests at 1%, 5%, and 10% respectively.

Consistent with the change model, several robustness checks are reported in this section, using the level model. Table 6.10 summarises the coefficients and *p*-values of the main testable variables. The detailed tests are reported in Appendices Seventeen to Nineteen. The results of the earnings management incentive variables ($SUSPECT_t$ and ST_t), and the main control variable ($ERPS_t$) in previous main analysis—based on the level model—are robust in all regulatory regimes, when focusing on the sample where ERPS > 0, using firms that have beaten the regulatory thresholds, and incorporating ROE into the model.

Table 6.10: Earnings Management Incentive; Robustness Checks–Using the Level Model; Dependent Variable = $ERPS_t$

VARIABLES	FULL (1999–2005)	PRE (1999–2001)	TRAN (2002)	POST (2003–2005)
(1) $ERPS > 0$				
$SUSPECT_t$	0.168***	0.217***	0.190***	0.101***
	(<0.001)	(<0.001)	(<0.001)	(<0.001)
ST_t	0.172***	0.202***	0.255***	0.102***
	(<0.001)	(<0.001)	(<0.001)	(<0.001)
(2) ROE ≥ thresholds of new equity offerings				
$SUSPECT_t$	0.349***	0.404***	0.339***	0.271***
	(<0.001)	(<0.001)	(<0.001)	(<0.001)
(3) Controlling for ROE				
$SUSPECT_t$	0.321***	0.373***	0.355***	0.244***
	(<0.001)	(<0.001)	(<0.001)	(<0.001)
ST_t	0.318***	0.361***	0.405***	0.249***
	(<0.001)	(<0.001)	(<0.001)	(<0.001)

This table reports robustness checks of whether firms inflate RPSs when there are earnings management incentives, based on the change model. All observations with sufficient data to calculate the dependent or independent variables are included. $ERPS_t$ is the difference between $RPS_t/SALE_t$ for the firm and the industry-mean level of $RPS_t/SALE_t$ excluding the own observation for which I calculate the measure. $SUSPECT_t$ takes 1 if ROE_t is more than the regulatory thresholds of new equity offerings but $PROE_t$ is less than the regulatory thresholds and 0 otherwise. ST_t takes 1 if if ROE_t is positive but less than the regulatory thresholds of new equity offerings and $PROE_t$ is negative and 0 otherwise. Other control variables are defined Appendix Five. All continuous variables are winsorised at the 1% and 99% levels. Two-tailed p-values are based on robust t-statistics that have been adjusted to control for the clustering by firm. ***,**,* signify statistical significance of two-tailed tests at 1%, 5%, and 10% respectively.

In sum, both the change and level specifications show that the coefficients on $SUSPECT_t$ and ST_t are significantly positive, providing support for H2a. The results suggest that *RPSs* are widely used to beat regulatory thresholds, even in the period after the 2001 RPT regulations took effect. However, the coefficients on $SUSPECT_t$ and ST_t in the post-regulatory regime are less than those in the pre-regulatory regime.

6.3.3 The Effect of the 2001 Related Party Transactions Measurement Regulation

To test the effectiveness of the 2001 RPT regulations in reducing earnings inflation via RPSs to beat regulatory thresholds, the regulatory dummy variables are added to Equations (5a and 5b) and interacted with earnings management incentive variables. The magnitude of ΔRPS and $ERPS$ is expected to be lower for $SUSPECT$ and ST firms than in the post-regulation period, when compared to these firms in the pre-regulation period. Table 6.11 reports the results, based on the change model (6a), and Table 6.12 reports the results based on the level model (6b). The first column reports the results based on the full sample, the second column reports the results based on the sample where firms report positive ΔRPS or $ERPS$, and the last column reports the results based on the sample where firms have beaten the regulatory thresholds. [38]

Consistent with the findings in Section 6.3.1 and 6.3.2, both the change and level model provide evidence that coefficients on $SUSPECT_t$ and ST_t are positive and statistically significant at 0.01 levels. The results suggest that without considering regulatory regime factors, the magnitudes of ΔRPS and $ERPS$ are greater for $SUSPECT$ and ST firms than other firms. This provides further evidence for H2a, that firms use RPSs to beat the ROE thresholds of new equity offerings and delisting.

[38] In the robustness checks, I also include the ROE into Models (3a) and (3b). All the main results remain qualitatively the same. The detailed results for this test are presented in the Appendices 19–20.

Table 6.11: The Effect of Regulation (2000–2005); Dependent Variable = ΔRPS_t

VARIABLES	PREDICTED SIGNS	FULL	$\Delta RPS > 0$	ROE ≥ thresholds
$SUSPECT_t$	+	0.279***	0.187***	0.290***
		(<0.001)	(<0.001)	(<0.001)
$SUSPECT_t \times TRAN_t$	-	-0.042	-0.028	-0.056
		(0.303)	(0.464)	(0.168)
$SUSPECT_t \times POST_t$	-	-0.092***	-0.063**	-0.100***
		(0.004)	(0.039)	(0.001)
ST_t	+	0.249***	0.155***	
		(<0.001)	(0.004)	
$ST_t \times TRAN_t$	-	0.073	0.091	
		(0.334)	(0.239)	
$ST_t \times POST_t$	-	-0.020	0.015	
		(0.737)	(0.805)	
$TRAN_t$	?	-0.004	-0.030**	0.017
		(0.659)	(0.028)	(0.130)
$POST_t$	?	0.010	-0.020	0.032***
		(0.290)	(0.156)	(0.005)
RPS_{t-1}	-	-0.293***	0.056**	-0.290***
		(<0.001)	(0.036)	(<0.001)
ΔRPS_{t-1}	-	-0.110***	-0.179***	-0.138***
		(<0.001)	(<0.001)	(<0.001)
$\Delta SIZE_t$	?	-0.015	-0.026	0.003
		(0.110)	(0.238)	(0.782)
ΔLEV_t	?	-0.028	0.038	-0.017
		(0.159)	(0.444)	(0.478)
MTB_{t-1}	?	-0.006	0.016*	-0.002
		(0.139)	(0.054)	(0.754)
Constant		-0.009	0.013	-0.044***
		(0.405)	(0.575)	(0.005)
IND		Y	Y	Y
YEAR		Y	Y	Y
n		3,950	1,442	2,005
Adj. R^2		0.377	0.302	0.421

This table reports regression results of the impact of regulation on the extent of earnings management, based on the change model. ΔRPS_t is the change in *RPS/SALE* from year t-1 to year t, calculated as $RPS/SALE_t$ - $RPS_{t-1}/SALE_{t-1}$. RPS_{t-1} is defined as $RPS_{t-1}/SALE_{t-1}$. $SUSPECT_t$ takes 1 if ROE_t is more than the regulatory thresholds of new equity offerings but $PROE_t$ is less than the regulatory thresholds and 0 otherwise. ST_t takes 1 if if ROE_t is positive and less than the regulatory thresholds of new equity offerings but $PROE_t$ is negative and 0 otherwise. Other control variables are defined Appendix Five. All continuous variables are winsorised at the 1% and 99% levels. Two-tailed p-values are based on robust t-statistics that have been adjusted to control for the clustering by firm. ***,**,* signify statistical significance of two-tailed tests at 1%, 5%, and 10% respectively.

Table 6.12: The Effect of Regulation (1999–2005); Dependent Variable = $ERPS_t$

VARIABLES	PREDICTED SIGNS	FULL	$ERPS > 0$	ROE ≥ thresholds
$SUSPECT_t$	+	0.360***	0.209***	0.389***
		(<0.001)	(<0.001)	(<0.001)
$SUSPECT_t \times TRAN_t$	-	-0.037	-0.026	-0.045
		(0.184)	(0.406)	(0.107)
$SUSPECT_t \times POST_t$	-	-0.093***	-0.094***	-0.098***
		(<0.001)	(<0.001)	(<0.001)
ST_t	+	0.349***	0.203***	
		(<0.001)	(<0.001)	
$ST_t \times TRAN_t$	-	0.015	0.027	
		(0.772)	(0.597)	
$ST_t \times POST_t$	-	-0.069**	-0.079**	
		(0.044)	(0.025)	
$TRAN_t$	?	0.015***	-0.022	0.008
		(0.010)	(0.286)	(0.215)
$POST_t$	?	0.031***	0.008	0.021**
		(<0.001)	(0.715)	(0.015)
$ERPS_{t-1}$	+	0.428***	0.407***	0.371***
		(<0.001)	(<0.001)	(<0.001)
$SIZE_t$	?	-0.001	-0.008	0.008**
		(0.792)	(0.395)	(0.048)
LEV_t	?	-0.012*	-0.003	0.005
		(0.099)	(0.927)	(0.527)
MTB_{t-1}	?	-0.006*	-0.006	-0.002
		(0.066)	(0.612)	(0.608)
Constant		-0.030	0.203	-0.236***
		(0.626)	(0.330)	(0.005)
IND		Y	Y	Y
YEAR		Y	Y	Y
n		4,607	1,173	2,492
Adj. R^2		0.686	0.561	0.732

This table reports regression results of the impact of regulation on the extent of earnings management, based on the level model. $ERPS_t$ is the difference between $RPS_t/SALE_t$ for the firm and the industry-mean level of $RPS_t/SALE_t$ excluding the own observation for which I calculate the measure. $SUSPECT_t$ takes 1 if ROE_t is more than the regulatory thresholds of new equity offerings but $PROE_t$ is less than the regulatory thresholds and 0 otherwise. ST_t takes 1 if if ROE_t is positive but less than the regulatory thresholds of new equity offerings and $PROE_t$ is negative and 0 otherwise. Other control variables are defined Appendix Five. All continuous variables are winsorised at the 1% and 99% levels. Two-tailed p-values are based on robust t-statistics that have been adjusted to control for the clustering by firm. ***,**,* signify statistical significance of two-tailed tests at 1%, 5%, and 10% respectively.

Both the change and level models show that coefficients on the interaction terms of $SUSPECT_t$ and $POST_t$ are significantly negative, indicating *SUSPECT* firms used significantly less RPSs in the post-regulation period than firms in the pre-regulation period. Based on the level model, the coefficient on the interaction term with ST_t and $POST_t$ is significant and negative, suggesting there is a greater reduction in the extent of *ERPS* for *ST* firms in the post-regulation period than firms in the pre-regulation period. However, when focusing on the change model, the coefficient on the interaction term with ST_t and $POST_t$ is not significant.

Consistent with previous findings, the change model shows that the ΔRPS_t is negatively correlated with ΔRPS_{t-1} and $ERPS_{t-1}$. The level model indicates that the *ERPS* is very persistent. With respect to other control variables using the change model, there is a positive and significant coefficient on MTB_{t-1} (*coeff* = 0.016, p = 0.054) at 0.1 levels, when focusing on the sample of firms reporting positive ΔRPS. With respect to other control variables using the change model, there is a positive and significant coefficient on $SIZE_t$ at 0.05 levels (*coeff* = 0.008, p = 0.048), when focusing on the sample of firms that have beaten the regulatory thresholds. There is also a negative and significant coefficient on LEV_t (*coeff* = -0.012, p = 0.099), and a negative and significant coefficient on MTB_{t-1} (*coeff* = -0.006, p = 0.066) at 0.1 levels, when using the full sample.

In summary, both the change and level models provide evidence that firms used less RPS manipulation to beat the regulatory thresholds of new equity offerings in the period post the effect of the 2001 RPT measurement regulation than before. This provides support for H2b. The level model also provides evidence that firms used less RPS manipulation to avoid delisting in the post-regulation period. The results are robust after

controlling for ROE, which is presented in Appendices Twenty to Twenty-One. Overall, the results indicate that the 2001 RPT measurement regulation has been somewhat effective in reducing earnings inflation via RPSs to beat the regulatory thresholds of new equity offerings and delisting.

6.3.4 Controlling for Corporate Governance Proxies

Prior literature suggests that good corporate governance mechanisms help mitigate earnings management via RPSs (Lo et al. 2010; Yeh et al. 2012; Hwang et al. 2013). To explore the effect of corporate governance mechanisms on the level of RPSs, the corporate governance variables are added to the models 6a and 6b. The model to test the effect of corporate governance is stated as:

$$\Delta RPS_t = f\begin{pmatrix} SUSPECT_t, ST_t, SUSPECT_t \times TRAN_t, SUSPECT_t \times POST_t, \\ ST_t \times TRAN_t, ST_t \times POST_t, TRAN_t, POST_t, RPS_{t-1}, \Delta RPS_{t-1} \\ \Delta SIZE_t, \Delta LEV_t, MTB_{t-1}, \Delta OWNCON_t, FOREIGN_t, \\ \Delta BOARDIND_t, BIG8_t, CEODUAL_t, IND, YEAR \end{pmatrix} \quad (7a)$$

$$ERPS_t = f\begin{pmatrix} SUSPECT_t, ST_t, SUSPECT_t \times TRAN_t, SUSPECT_t \times POST_t, \\ ST_t \times TRAN_t, ST_t \times POST_t, TRAN_t, POST_t, ERPS_{t-1} \\ SIZE_t, LEV_t, MTB_{t-1}, OWNCON_t, FOREIGN_t, \\ BOARDIND_t, BIG8_t, CEODUAL_t, IND, YEAR \end{pmatrix} \quad (7b)$$

Where:

ΔRPS_t	=	the change in RPS, measured as $RPS_t/SALE_t - RPS_{t-1}/SALE_{t-1}$
$ERPS_t$	=	the difference between $RPS_t/SALE_t$ for the firm and the industry-mean level of $RPS_t/SALE_t$ excluding the own observation for which I calculate the measure
$SUSPECT_t$	=	calculated as 1 if ROE_t is more than the regulatory thresholds of new equity offerings and (1) $PROE_t$ (ROE_t excluding ΔRPS_t and its associated $COGS_t$) is less than the regulatory thresholds for the change model; (2) $PROE_t$ (ROE_t excluding $ERPS_t$ and its associated $COGS_t$) is less than the regulatory thresholds for the cross-sectional model; and 0 otherwise

ST_t	=	calculated as 1 if ROE_t is positive but less than the regulatory thresholds of new equity offerings and (1) $PROE_t$ (ROE_t excluding ΔRPS_t and its associated $COGS_t$) is negative for the change model; (2) $PROE_t$ (ROE_t excluding $ERPS_t$ and its associated $COGS_t$) is negative for the cross-sectional model, and 0 otherwise
$SIZE_t$	=	the log form of market value in year t
$\Delta SIZE_t$		the change in the log form of market value from year t-1 to year t
LEV_t	=	the long-term debt deflated by total assets in year t
ΔLEV_t		the change in leverage from year t-1 to year t
MTB_{t-1}	=	the market-to-book ratio in year t-1
$OWNCON_t$	=	share owned by the largest shareholder scaled by total shares
$\Delta OWNCON_t$	=	the change in the percentage of shares owned by the largest shareholder from year t-1 to year t
$FOREIGN_t$	=	1 if the firm has foreign ownership and 0 otherwise
$BOARDIND_t$	=	number of independent directors divided by total directors
$BIG8_t$	=	1 if there is a big-8 audit firm and 0 otherwise
$CEODUAL_t$	=	1 if the CEO and chairman is the same person and 0 otherwise
IND	=	dummy variables indicating industry sector membership
$YEAR$	=	dummy variables for years

Ownership concentration ($OWNCON_t$) is included to examine whether the proportion of shares owned by the largest shareholder has an influence on the level of industry-mean adjusted RPSs ($ERPS_t$). Prior studies suggest that in firms with concentrated ownership, controlling shareholders use RPTs to prop up a firm's earnings (Cheung et al. 2009b; Jian & Wong; 2010; Lo et al. 2010; Yeh et al. 2012). The percentage of shares owned by the largest owner ($OWNCON_t$) is used as the measure of ownership concentration. The coefficient on $OWNCON_t$ is expected to be positive. For the change model, the $OWNCON_t$ is replaced with $\Delta OWNCON_t$. To examine whether the presence of foreign shareholders reduces the level of ERPS, the presence of foreign ownership ($FOREIGN_t$), measured as a dummy equalling '1' if the firm issues foreign shares and '0' otherwise, is added ton the model.

Previous literature suggests that board independence can improve corporate governance mechanism and reduce earnings manipulation (Cornett et al. 2009; Lo et al. 2012). Board independence ($BOARDIND_t$) is measured as the percentage of independent directors over total directors, to control for the influence of board independence on ERPS. The coefficient on $BOARDIND_t$ is expected to be negative. For the change model, the $BOARDIND_t$ is replaced with Δ $BOARDIND_t$. Audit firms have a direct influence on the quality of accounting disclosure, and Big-N audit firms may enhance the credibility of financial statements to a greater extent than non-Big-N firms. Consistent with Jian and Wong (2010), Big-8 firms ($BIG8_t$) in China, which takes '1' if the audit firm belongs to the Big-8 and '0' otherwise, are used to examine the effectiveness of big auditing firms in reducing manipulated RPSs. Finally, Jensen (1993) suggests that, when the CEO is chair of the board, the CEO has responsibility for making and monitoring decisions. Thus, the CEO has more power to pursue personal interests instead of shareholders' interests. The *CEODUAL*, measured as '1' if the CEO and chairman are different persons and '0' otherwise, is added to the model to examine whether the presence of a CEO and chair duality ($CEODUAL_t$) affects the level of ERPS. The coefficient on $CEODUAL_t$ is expected to be negative.

Tables 6.13 and 6.14 present the results, based on model (7a) and model (7b) respectively. The first column reports the results based on the full sample, the second column reports the results based on the sample of firms reporting positive ΔRPS_t and $ERPS_t$, and the last column reports the results based on the sample where firms have beaten the regulatory thresholds. Compared to the previous analysis using models 6a and 6b presented in Tables 6.11 and 6.12, the inclusion of these corporate governance variables does not increase the power of empirical models. In contrast, the adjusted R-square of the regression models decreases slightly due to a drop in observations. The

results on earnings management incentives ($SUSPECT_t$ and ST_t), and the interaction between earnings management incentives and regulatory dummies remain qualitatively the same.

For the corporate governance variables, there is a significant and positive relationship between the change in and the level of ownership concentration and the change in and the level of RPS under all specifications. There is also a negative and significant association between the change in and the level of board independence and the change in and the level of RPS at 0.1 levels. The results suggest that ownership concentration is positively associated with RPS manipulation, and board independence can somewhat constrain RPS manipulation.

Table 6.13: Corporate Governance and RPS manipulation (2000–2005); Dependent Variable = ΔRPS_t

VARIABLES	PREDICTED SIGNS	FULL	$\Delta RPS_t > 0$	ROE ≥ thresholds
$SUSPECT_t$	+	0.274***	0.183***	0.285***
		(<0.001)	(<0.001)	(<0.001)
$SUSPECT_t \times TRAN_t$	-	-0.037	-0.024	-0.050
		(0.361)	(0.541)	(0.212)
$SUSPECT_t \times POST_t$	-	-0.092***	-0.064**	-0.099***
		(0.003)	(0.034)	(0.001)
ST_t	+	0.248***	0.155***	
		(<0.001)	(0.004)	
$ST_t \times TRAN_t$	-	0.073	0.087	
		(0.335)	(0.258)	
$ST_t \times POST_t$	-	-0.016	0.019	
		(0.786)	(0.748)	
$TRAN_t$	?	0.007	-0.024	0.026*
		(0.468)	(0.140)	(0.080)
$POST_t$	?	0.026**	-0.010	0.047**
		(0.027)	(0.600)	(0.020)
RPS_{t-1}	-	-0.302***	0.050*	-0.303***
		(<0.001)	(0.069)	(<0.001)
ΔRPS_{t-1}	-	-0.107***	-0.181***	-0.134***
		(<0.001)	(<0.001)	(<0.001)
$\Delta SIZE_t$	?	-0.013	-0.024	0.009
		(0.181)	(0.274)	(0.533)
ΔLEV_t	?	-0.025	0.045	-0.014
		(0.241)	(0.367)	(0.599)
MTB_{t-1}	?	-0.005	0.016*	0.001
		(0.213)	(0.059)	(0.858)
$\Delta OWNCON_t$	+	0.094**	0.150**	0.065*
		(0.038)	(0.015)	(0.066)
$FOREIGN_t$	-	0.018	0.006	0.011
		(0.331)	(0.858)	(0.715)
$\Delta BOARDIND_t$	-	-0.009*	-0.019	-0.009
		(0.074)	(0.122)	(0.258)
$BIG8_t$	-	-0.017	-0.007	0.016
		(0.178)	(0.554)	(0.252)
$CEODUAL_t$	-	-0.047	-0.021	-0.034
		(0.199)	(0.643)	(0.482)
Constant		-0.001	0.030	-0.041**
		(0.959)	(0.244)	(0.014)
IND		Y	Y	Y
YEAR		Y	Y	Y
n		3,894	1,421	1,972
Adj. R^2		0.381	0.304	0.427

This table reports results of the effect of corporate governance proxies on ΔRPS. ΔRPS_t is the change in *RPS/SALE* from year t-1 to year t, calculated as $RPS_t/SALE_t$ - $RPS_{t-1}/SALE_{t-1}$. RPS_{t-1} is defined as $RPS_{t-1}/SALE_{t-1}$. $SUSPECT_t$ takes 1 if ROE_t is more than the regulatory thresholds of new equity offerings but $PROE_t$ is less than the regulatory thresholds and 0 otherwise. ST_t takes 1 if if ROE_t is positive and less than the regulatory thresholds of new equity offerings but $PROE_t$ is negative and 0 otherwise. $\Delta OWNCON_t$ is shares owned by the largest shareholder scaled by total shares. $FOREIGN_t$ takes 1 if the firm has foreign ownership and 0 otherwise. $BOARDIND_t$ is number of independent directors divided by total directors. $BIG8_t$ takes 1 if there is a big-8 audit firm and 0 otherwise. $CEODUAL_t$ takes 1 if the CEO and chairman are different persons and 0 otherwise. Other control variables are defined Appendix Five. All continuous variables are winsorised at the 1% and 99% levels. Two-tailed p-values are based on robust t-statistics that have been adjusted to control for the clustering by firm. ***,**,* signify statistical significance of two-tailed tests at 1%, 5%, and 10% respectively.

Table 6.14: Corporate Governance and RPS manipulation (1999–2005); Dependent Variable = $ERPS_t$

VARIABLES	PREDICTED SIGNS	FULL	$ERPS_t > 0$	ROE ≥ thresholds
$SUSPECT_t$	+	0.356***	0.210***	0.386***
		(<0.001)	(<0.001)	(<0.001)
$SUSPECT_t \times TRAN_t$	-	-0.039	-0.029	-0.045
		(0.174)	(0.360)	(0.113)
$SUSPECT_t \times POST_t$	-	-0.098***	-0.103***	-0.101***
		(<0.001)	(<0.001)	(<0.001)
ST_t	+	0.351***	0.207***	
		(<0.001)	(<0.001)	
$ST_t \times TRAN_t$	-	0.013	0.023	
		(0.802)	(0.652)	
$ST_t \times POST_t$	-	-0.071**	-0.086**	
		(0.043)	(0.017)	
$TRAN_t$	?	0.027***	-0.007	0.011
		(0.001)	(0.813)	(0.337)
$POST_t$	?	0.049***	0.034	0.027
		(<0.001)	(0.380)	(0.122)
$ERPS_{t-1}$	+	0.420***	0.398***	0.359***
		(<0.001)	(<0.001)	(<0.001)
$SIZE_t$	?	-0.002	-0.012	0.007*
		(0.455)	(0.191)	(0.081)
LEV_t	?	-0.011	-0.001	0.006
		(0.168)	(0.973)	(0.506)
MTB_{t-1}	?	-0.004	-0.002	-0.001
		(0.281)	(0.882)	(0.871)
$OWNCON_t$	+	0.040***	0.055**	0.035*
		(0.004)	(0.029)	(0.051)
$FOREIGN_t$	-	0.008	-0.005	0.020
		(0.619)	(0.950)	(0.428)
$BOARDIND_t$	-	-0.010*	-0.012	-0.002
		(0.087)	(0.471)	(0.715)
$BIG8_t$	-	0.001	-0.007	-0.005
		(0.850)	(0.692)	(0.479)
$CEODUAL_t$	-	-0.040	-0.040	-0.008
		(0.102)	(0.636)	(0.846)
Constant		-0.018	0.274	-0.230***
		(0.771)	(0.184)	(0.007)
IND		Y	Y	Y
YEAR		Y	Y	Y
n		4,526	1,151	2,439
Adj. R^2		0.681	0.566	0.725

This table reports results of the effect of corporate governance proxies on *ERPS*. $ERPS_t$ is the difference between $RPS_t/SALE_t$ for the firm and the industry-mean level of $RPS_t/SALE_t$ excluding the own observation for which I calculate the measure. $SUSPECT_t$ takes 1 if ROE_t is more than the regulatory thresholds of new equity offerings but $PROE_t$ is less than the regulatory thresholds and 0 otherwise. ST_t takes 1 if if ROE_t is positive but less than the regulatory thresholds of new equity offerings and $PROE_t$ is negative and 0 otherwise. $OWNCON_t$ is shares owned by the largest shareholder scaled by total shares. $FOREIGN_t$ takes 1 if the firm has foreign ownership and 0 otherwise. $BOARDIND_t$ is number of independent directors divided by total directors. $BIG8_t$ takes 1 if there is a big-8 audit firm and 0 otherwise. $CEODUAL_t$ takes 1 if the CEO and chairman are different persons and 0 otherwise. Other control variables are defined Appendix Five. All continuous variables are winsorised at the 1% and 99% levels. Two-tailed p-values are based on robust t-statistics that have been adjusted to control for the clustering by firm. ***,**,* signify statistical significance of two-tailed tests at 1%, 5%, and 10% respectively.

6.4 Trade-Offs Between RPS and Discretionary Accruals

In this section, I distinguish the use of RPSs from discretionary accruals. Jian and Wong (2010) found that, when firms have options to use RPSs to inflate earnings, they are less likely to use discretionary accruals. I extend Jian and Wong (2010) by examining the effect of the 2001 RPT regulations on trade-offs between discretionary accruals and the level of industry-mean adjusted RPSs (*ERPS*). Discretionary accruals are calculated using the following modified Jones model (Dechow et al. 1995):

$$\frac{Accruals_t}{Assets_{t-1}} = \beta_1 \frac{1}{Assets_{t-1}} + \beta_2 \frac{(\Delta REV_t - \Delta AR_t)}{Assets_{t-1}} + \beta_3 \frac{PPE_t}{Assets_{t-1}} + \varepsilon_t \quad (8)$$

Where:

$Accruals_t$	=	the difference between earnings before non-operating items and operating cash flows
$Assets_{t-1}$	=	total assets in year t-1
ΔREV_t	=	changes in sales revenue from year t-1 to year t
ΔAR_t	=	changes in accounts receivables from year t-1 to year t
PPE_t	=	the original value of PPE

The cross-sectional model presented in Equation (8) is estimated for each year for each industry based on the three-digit CSRC codes. The residuals generated by these industry-year estimations are used as the measure of discretionary accruals. I then perform two tests to examine whether firms use discretionary accruals and RPSs as substitutes. The first test examines whether discretionary accruals are associated with ERPSs by regressing discretionary accruals on the industry-mean adjusted RPSs (*ERPS*) (Equation 9a). If the RPSs and discretionary accruals are substitute devices for earnings management, the level of ERPS will be negatively correlated with discretionary accruals. I then examine whether firms use less discretionary accruals when they can use RPSs to beat the regulatory thresholds of new equity offerings by regressing discretionary

accruals on *SUSPECT* (Equation 9b). Note that *SUSPECT* implies that firms have already used RPSs to beat the regulatory thresholds. If RPSs serve as substitutes to accruals management to meet or beat regulatory thresholds, a negative coefficient on $SUSPECT_t$ is expected. In both regressions, I control for firm size ($SIZE_t$), leverage (LEV_t), market-to-book (MTB_t) and ROE_t, as prior studies suggest these firm-specific factors affect discretionary accruals (Jones 1991; Dechow, Sloan & Sweeney 1995; Rangan 1998; Teoh et al. 1998).

To investigate the effect of regulations on the trade-offs between discretionary accruals and RPSs, I test models (9a) and (9b) in different regulatory regimes:

$$DA_t = \beta_0 + \beta_1 ERPS_t + \beta_2 SIZE_t + \beta_3 LEV_t + \beta_4 MTB_t + \beta_5 ROE_t + INDUSTRY + YEAR + \varepsilon_t \quad (9a)$$

$$DA_t = \beta_0 + \beta_1 SUSPECT_t + \beta_2 SIZE_t + \beta_3 LEV_t + \beta_4 MTB_t + \beta_5 ROE_t + INDUSTRY + YEAR + \varepsilon_t \quad (9b)$$

Where:

DA_t	=	discretionary accruals, calculated by the modified Jones model (Dechow, Sloan & Sweeney 1995)
$ERPS_t$	=	the difference between $RPS_t/SALE_t$ for firm *i* and the industry-mean level of $RPS_t/SALE_t$ calculated excluding firm *i*.
$SUSPECT_t$	=	1 if ROE_t exceeds the regulatory thresholds of new equity offerings when $PROE_t$ is less than the regulatory thresholds and 0 otherwise
$SIZE_t$	=	the log form of market value in year t
LEV_t	=	the long-term debt deflated by total assets in year t
MTB_t	=	the market-to-book ratio in year t
ROE_t	=	the firms' ROE calculated as net earnings after tax divided by total owners' equity

The results Equation 9a are reported in Table 6.15 Panel A. The results provide evidence that the coefficients in the pre-regulation period (*coeff* = -0.013, $p = 0.084$) are significant and negative at 0.1 level, suggesting there is indeed a substitution effect between discretionary accruals and ERPSs in this regulatory regime. However, the substitution effects between ERPSs and discretionary accruals are not significant in the

transitory and post-regulation periods. The results conclude that RPSs were a substitute to discretionary accruals during 1999 to 2001, consistent with Jian and Wong (2002). However, the substitution relationship is not significant in the post-regulatory regimes.

The results Equation 9b are reported in Table 6.15 Panel B. The coefficient on $SUSPECT_t$ is negative and significant at 0.05 level, based on the full sample during 1999 to 2005. The coefficient is also significant and negative in the pre-regulation period (*coeff* = -0.012, p = 0.038), and in the transitory period (*coeff* = -0.010, p = 0.013). This provides support for the Jian and Wong's argument that when firms use RPSs to beat the regulatory thresholds of new equity offerings, they use significantly less discretionary accruals. Nevertheless, the substitution effect between discretionary accruals and ERPS becomes not significant in the post-regulatory regime during 2003 to 2005. This might be because the 2001 RPT measurement regulation largely increased the cost of price inflation in RPSs. Reliance solely on volumes inflation via RRSs in the post-regulation period might not have been sufficient to achieve earnings targets, and firms might have increased the use of other earnings management tools such as discretionary accruals.[39]

[39] In further robustness checks for this test that is not tabulated, I investigate the relations of the change in discretionary accruals and the change in RPSs. The results of the tests between these two variables are negative but not significant, indicating that the change in RPSs is not significantly associated with the change in discretionary accruals. The level test should be interpreted as lack of robustness.

Table 6.15: The Trade-Off between Discretionary Accruals and ERPS

Dependent Variable = DA_t

VARIABLES	PREDICTED SIGNS	FULL (1999–2005)	PRE (1999–2001)	TRAN (2002)	POST (2003–2005)
Panel A The Relation Between DA_t and $ERPS_t$					
$ERPS_t$	-	-0.006	-0.013*	-0.001	-0.001
		(0.198)	(0.084)	(0.953)	(0.944)
$SIZE_t$	?	-0.004***	-0.003	-0.004**	-0.004***
		(0.010)	(0.200)	(0.043)	(0.002)
LEV_t	?	0.026***	0.033***	0.025***	0.017**
		(<0.001)	(<0.001)	(0.001)	(0.028)
MTB_t	?	0.006***	0.008***	0.007***	0.003
		(<0.001)	(<0.001)	(0.008)	(0.411)
ROE_t	?	-0.001	0.003**	-0.001	-0.001
		(0.640)	(0.023)	(0.415)	(0.130)
Constant		-0.005	-0.035	0.004	0.014
		(0.867)	(0.436)	(0.933)	(0.638)
IND		Y	Y	Y	Y
YEAR		Y	Y	N	Y
n		4,510	1,963	650	1,897
Adj. R^2		0.033	0.047	0.038	0.021
Panel B The Relation Between DA_t and $SUSPECT_t$					
$SUSPECT_t$	-	-0.009**	-0.012**	-0.010**	-0.003
		(0.010)	(0.038)	(0.013)	(0.324)
$SIZE_t$	?	-0.004**	-0.003	-0.004*	-0.004***
		(0.012)	(0.189)	(0.064)	(0.002)
LEV_t	?	0.026***	0.033***	0.025***	0.017**
		(<0.001)	(<0.001)	(0.001)	(0.023)
MTB_t	?	0.006***	0.008***	0.008***	0.003
		(<0.001)	(<0.001)	(0.004)	(0.385)
ROE_t	?	-0.001	0.003**	-0.001	-0.001
		(0.836)	(0.010)	(0.543)	(0.131)
Constant		-0.008	-0.031	-0.007	0.012
		(0.792)	(0.513)	(0.876)	(0.691)
IND		Y	Y	Y	Y
YEAR		Y	Y	N	Y
n		4,510	1,963	650	1,897
Adj. R^2		0.037	0.051	0.044	0.021

This table reports the results of the trade-off between discretionary accruals and ERPS. All observations with sufficient data to calculate the dependent or independent variables are included. DA_t is discretionary accruals, calculated by the modified Jones model (Dechow, Sloan & Sweeney 1995). $ERPS_t$ is t the difference between $RPS_t/SALE_t$ for firm i and the industry-mean level of $RPS_t/SALE_t$ excluding the own observation for which I calculate the measure. $SUSPECT_t$ takes 1 if ROE_t is more than the regulatory thresholds of new equity offerings but $PROE_t$ is less than the regulatory thresholds and 0 otherwise. Other control variables are defined Appendix Five. All continuous variables are winsorised at the 1% and 99% levels. Two-tailed p-values are based on robust t-statistics that have been adjusted to control for the clustering by firm. ***,**,* signify statistical significance of two-tailed tests at 1%, 5%, and 10% respectively.

6.5 Chapter Summary

The results for H1, H1(a) and H1(b), as reported in Section 6.2, provide evidence of a positive and significant relation between price manipulation proxies and income-increasing RPSs in the pre-regulation period. There is no evidence of a significant relation in the post-regulation period.

The results for H2a and H2b were reported in Section 6.3. As predicted, the magnitude of earnings management via RPSs was abnormally higher for firms with incentives to inflate earnings than other firms. However, firms with incentives to beat the regulatory thresholds of new equity offerings used less RPS manipulation in the post-regulation period compared to firms in similar circumstances before the regulation. From tests of the effect of corporate governance characteristics, there was a positive and significant association between ownership concentration and the level of RPS manipulation, and a significant and negative association between board independence and the level of RPS manipulation.

Based on the further tests reported in Section 6.4, I conclude that RPSs served as a substitute to discretionary accruals in the pre-regulation period. This is consistent with Jian and Wong (2010). However, the substitution effect is not evident in the post-regulation period. The implications of these results are discussed in the final chapter.

Chapter 7: Conclusion

7.1 Introduction

This chapter summarises the main findings of this thesis and discusses their implications and contributions. Section 7.2 summarises the results of hypotheses testing. Section 7.3 discusses the contribution and implications of the findings. Section 7.4 discusses the research limitations and outlines issues that warrant future research.

7.2 Summary of Findings

RPSs have been regarded as a primary means of earnings management in China. The abuse of RPSs and other types of RPTs resulted in several corporate failures in the late 1990s. The MOF issued the 2001 RPT measurement regulation, aimed at reducing earnings inflation via RPTs. The primary objective of this thesis is to examine the impact of the 2001 RPT measurement regulation on earnings management via RPSs in China. Specifically, I first investigated the effectiveness of this regulation in reducing price inflation in RPSs. I then examined the effectiveness of the RPT regulation in reducing the extent of earnings management via RPSs for firms with incentives to manipulate earnings.

To examine the first research question, I focused on the relationship between the change in gross margin and income-increasing RPSs. The results document that price manipulation activities are positively correlated with income-increasing RPSs in the pre-regulation period, but the association was not significant in the post-regulation period. The results suggested that transfer pricing techniques via RPSs were widely

used to inflate earnings before the introduction of the 2001 RPT measurement regulation. However, after the regulation, income-increasing RPSs referred mainly to volumes inflation. The results concluded that the 2001 RPT measurement regulation was somewhat effective in reducing price inflation in RPSs.

To examine the second research question, I ran the regression of RPS manipulation proxies on earnings management incentive variables. The results provided evidence that the extent of earnings management via RPSs was abnormally higher for firms with incentives to inflate earnings than other firms for each of regulatory regimes. However, firms with incentives to beat the regulatory thresholds of new equity offerings used significantly less RPS manipulation in the post-regulation period compared to these firms in similar circumstances before the regulation. The results suggested that the 2001 RPT measurement regulation reduced the level of earnings inflation in RPSs for firms with incentives to manipulate earnings.

To examine the effect of corporate governance mechanisms on the level of RPS manipulation, several corporate governance proxies were added to previous analyses. The results provided evidence that ownership concentration was positively correlated with the level of RPS manipulation, and board independence was negatively correlated with the level of RPS manipulation. To examine the effect of the 2001 regulatory change on the trade-offs between discretionary accruals and RPSs, I ran the model of discretionary accruals on the level of RPSs. The results provided evidence that RPSs served as substitutes to discretionary accruals in the pre-regulation period but the substitution effect is not significant in the post-regulation period.

7.3 Contribution and Implications of Findings

This thesis contributes to the literature in several ways. First, the results contribute to the theoretical debate concerned with the role of RPTs in China. Prior literature proposed two alternative views of RPTs. The first view, referred to as the economic efficiency view, considers RPTs rationally fulfil the underlying economic needs of a company and minimise transaction costs between related parties. The second view, referred to as the conflicts of interests view, considers RPTs present agency issues as noted by Jensen and Meckling (1976) and La Porta et al (2000). The results support the conflicts of interest perspective, suggesting that RPTs are not usually conducted at arms' length and represent an incorrect transfer of resources between corporate groups.

Second, this thesis links with previous literature concerned with the motivations behind RPTs. Propping studies suggest that RPTs are also used to prop up firms in distress or that are planning seasoned equity offerings (Aharony et al. 2010; Jian & Wong; 2010; Lo et al. 2010; Yeh et al. 2012). This thesis contributes to the propping literature by providing evidence that RPSs can be used to prop up earnings to beat the regulatory benchmarks of new equity offerings and delisting. More importantly, this study extends the general earnings management literature concerned with RPSs. This is the first study to consider the prevalence of price inflation in RPSs. Specifically, I examined whether income-increasing RPSs were associated with price inflation before and after the regulatory change. The results suggest that listed firms can either choose to inflate sales price or volumes in the pre-regulation period, but rely largely on volumes inflation in the post-regulation period.

Third, this study links with prior corporate governance research (Gordon et al. 2004; Lei & Song. 2011; Ye et al. 2012; Hwang et al. 2013), and provides some insights into the association between corporate governance proxies and the extent of RPSs. In particular, this thesis provides evidence that RPS manipulation is positively related to ownership concentration, providing a support for La Porta et al's (1999) theory that related party transactions are very prevalent in countries where ownership is concentrated. Consistent with Ye et al. (2012), the results also provides evidence that good board independence somewhat limits earnings inflation via RPSs.

The results reported in this thesis have important policy implications for regulators in China. The results reveal that the 2001 RPT regulations were effective in reducing price manipulations for RPS, but did not eliminate earnings inflation via RPSs. As Pan et al. (2006) suggested, this is largely because firms have alternatives to inflate RPS volumes. Regulators in China should be aware of this issue and make efforts to reduce RPS volumes in future policy development.

7.4 Limitations and Future Research

This research is not without its limitations. First, as actual transaction prices of RPSs are not observable outside a firm, this study uses average gross margins to proxy for price manipulations. Although the model includes many controls, the proxy may include price inflation for sales to non-related parties. However, I argue that this problem is unlikely to be substantial because it is much easier to manipulate transaction prices with related parties than non-related parties.

Second, this thesis focuses on recurring related party transactions (using RPSs in the main tests and RPP in further tests). The results regarding price manipulations might not be generalisable to non-recurring related party transactions. The results regarding volume manipulations are not relevant to non-recurring items. This is left to future research to investigate how the regulations impact on the use of non-recurring items.

Third, the analysis in this thesis is based on two earnings management incentives that are concerned with propping: beating the regulatory thresholds for new equity offerings or to avoid delisting. Earnings management incentives concerned with tunnelling, such as avoiding dividend payments to minority shareholders, are beyond the scope of this thesis but and it is left to future research to reveal whether earnings management attributable to such incentives was also affected by the regulatory changes .

Fourth, the measure of earnings management incentive variables in this thesis have been based on ROE thresholds. Future research could use other potential methods to measure these earnings management incentives, for instance, whether there is an accrual application or issue of new equity offerings. Further research could also conduct event-typed research to investigate the level of RPS inflation in the period prior to the issue of new shares versus the period after issue.

Finally, the sample period in this study ends at the year 2005. In 2006, China issued its new accounting standards, which no longer requires listed firms to calculate the capital-surplus account of RPTs. Future research could examine whether the new accounting standard in 2006 again resulted in an increase in price inflation in RPSs.

Appendices

Appendix One: Accounting Standards for Related Party Transactions

Issues	The RPT Standard (1997–2005)	The Accounting Standard (2006–current)
Definition of related parties	The related party relationship is constituted if one party has the ability to control the other party or exercise significant influence over the other party in making financial and operating decisions; or two parties are controlled by one party.	The definition addresses the issue of *indirect* control, stating that a related party relationship is also constituted if one party has the ability to indirectly control other party or exercise significant influence over the other party in making financial and operating decisions; or two parties are indirectly controlled by one party.
General principles in recognising related party relationships	The 1997 accounting standards did not mention the principle of substance over form.	Addressed the principle of substance over form in considering each possible related party relationship.
Examples of related parties	Parent companies, subsidiaries, parent firms' other affiliates, joint ventures, associate companies, major investors and their immediate family members, key managers and their immediate family members, and other companies that are directly controlled by major investors, key managers or their immediate family members.	The parent firm's key managers and their immediate family members, or other companies that are directly or indirectly controlled by key managers or their immediate family members.
Government-related entities	Enterprises shall not be regarded as related parties simply because they are all under the control of the state.	Same as the 1997 Accounting standards
Definition of RPT	A related party transaction refers to an event whereby a transfer of resources, labour services or obligations takes place between affiliated parties, irrespective of whether money is charged.	Same as the 1997 Accounting standards

Scope of disclosure	It is not required to disclose the RPT that have been included in the scope of consolidation, but it shall disclose the related party relationships and transactions beyond the scope of consolidation.	Same as the 1997 Accounting standards
Disclosure requirements	The 1997 accounting standard did not mention the disclosure requirement of ultimate controlling party and its basic information	The 2006 accounting standards require listed firms to disclose the basic information of the ultimate controlling shareholder if the parent company is not the ultimate controlling party, and the proportion of voting rights by the parent company in this enterprise or by this enterprise in its subsidiaries.
Other specific requirements		Enterprise cannot state that related party transaction is fair unless it provides exact proofs.
Accounting treatment issued by the MOF (2001–2005)[a]	If the selling price of a related party transaction is higher than the fair value, the price differential (price less fair value) cannot be recognised as earnings.	

Note: [a] The 2001 accounting treatment for RPT is a transitory regulation applying only when the selling price of a related party transaction is above its fair value. This regulation lost effect in 2006. The 2006 accounting standard no longer requires listed firms report the price differential account of RPT.

Appendix 2: Propping and Tunnelling Studies of Related Party Transactions

Authors	Purposes of RPTs	Types of RPTs	Research topic	Major findings
Cheung, Rau & Stouraitis (2006)	Tunnelling	Asset sales, asset purchases, asset swaps, equity sales, joint ventures between related parties	They investigate tunnelling behaviours through a sample of 254 RPTs between listed firms in Hong Kong and their controlling shareholders	• Firms announcing tunnelling transactions exhibit significant negative excess returns that are also significantly lower than firms announcing similar arm's length transactions. • Investors in the market cannot predict expropriation in the period prior to expropriation and revalue firms only when expropriation does occur.
Berkman, Cole & Fu (2009)	Tunnelling	Loan guarantees	They analyse how controlling shareholders tunnel wealth from minority shareholders by loan guarantees, by a sample of 88 Chinese listed firms that issued loan guarantees to their related parties in 1999	• The issuance of related party loan guarantees is more likely at smaller firms, at more profitable firms and at firms with higher growth prospects. • Firms with state agencies and bureaus as controlling block holders are less likely to issue related party loan guarantees. • Tobin's Q, ROA is lower firms that issued related guarantees than firms without.
Cheung et al. (2009a)	Tunnelling	asset transfers, asset sales and asset purchases	They examine how controlling shareholders tunnel wealth from minority shareholders by a sample of 254 related party and arms' length acquisitions and sales of assets in Hong Kong	• The results provide evidence for tunnelling via asset transfers, purchases and sales. Asset transfers to related parties are usually conducted at unfavourable prices compared to similar arms' length deals. RPPs (sales) of assets are at a higher (lower) price than similar arms' length deals. • With the exception of audit committees, corporate governance characteristics have very limited impacts on transaction prices.

Cheung et al. (2009b)	Tunnelling and propping	Various types of transactions announced in the stock market, including both recurring and non-recurring items	They examine a sample of 292 RPT between listed firms and their controlling shareholders in China during 2001 to 2002 for both tunnelling and propping purposes	• On balance, their classification of tunnelling and propping transactions shows that more RPT are used for tunnelling purposes than propping-up. • Firms that conduct both types of transactions have larger state ownership than other firms. Moreover, propped up firms have larger state ownership than tunnelling firms. Propped up firms are more likely to have foreign ownership and to be cross-listed abroad than tunnelling firms. • Propped up firms tend to have worse operating performance in the year just after the announcement of RPTs.
Jiang, Lee & Yue (2010)	Tunnelling	Loans	They investigate how controlling shareholders tunnel resources from their listed companies via related party loans in China during the 1996–2006	• Corporate loans, typically reported as part of other receivables in the balance sheet of listed firms, represent a large portion of assets and market values. • Tunnelling via corporate loans is more severe for local government-owned firms than central government-owned firms, and firms in which the controlling shareholder has the lowest cash flow ownership rights. • Firms with large other receivables balances exhibit worse future operating performance. • Market participants do not seem to fully anticipate the consequences of tunnelling via corporate loans.
Lei and Song (2011)	Tunnelling	Various types of transactions announced in the stock market, including both recurring and non-recurring items	They investigate tunnelling through a sample of 590 RPT announced by Chinese firms listed in Hong Kong	• Firm value is significantly lower for firms undertaking potentially tunnelling transactions. • Cumulative abnormal returns are lower for RPTs with disclosure exemptions.

Peng, Wei & Yang (2010)	Tunnelling, propping	Asset sales, asset purchases, asset swaps, equity sales, cash payments between related parties	They examine the market reaction to propping and tunnelling RPT by a sample of 1311 RPT during 1998–2004	• They define tunnelling transactions as those traded by firms that have successfully gained the approval of new equity offerings, and propping transactions as those traded by firms that face the risk of delisting. • There is a negative market reaction to tunnelling transactions, and a positive market reaction to announcements of propping transactions. • Their findings show that the use of tunnelling or propping depends on different financial situations of the listed firm.
Aharony, Wang & Yuan (2010)	Tunnelling, propping,	RPSs and purchases of products and services	They examine whether firms inflate RPT in the period prior to IPOs, by a sample 185 IPOs to be listed in Shanghai during 1999–2001	• They providence evidence that RPSs of goods and services is used to inflate earnings in the pre-IPO period, and they also provide evidence that the extent of earnings management via RPSs in the pre-IPO period is associated with the post-IPO tunnelling via non-payment of corporate loans. • They demonstrate that investors in Chinese IPOs fail to perceive the link between the two phenomena.
Jian and Wong (2010)	Propping	RPS of products and services	They examine whether controlling shareholders in China prop up their listed subsidiaries' earnings by RPS during 1998–2002	• RPSs in China are widely used to inflate earnings to beat the earnings target of rights issues and delisting. • Earnings inflation via abnormal RPS propping is more prevalent among state-owned firms and in regions with weaker economic institutions. • Earnings management via abnormal RPS serve as a substitute rather than complement to discretionary accruals. • There is significant cash transfer via related lending from listed firms back to controlling owners after the propping.

Yeh et al. (2012)	Corporate governance, propping, tunnelling	RPS lending and guarantee	They examine the effect of corporate governance on the extent of RPTs, using a sample of listed firms in Taiwan during 1996–2008	• The quality of corporate governance is negatively correlated with the level of RPTs. • The evidence provides a partial support for the propping-up hypothesis that firms use RPS to inflate earnings in the period prior to new SEOs or to avoid earnings decline. • There is also a partial support for the internal capital market hypothesis that the level of related lending and guarantee is negatively correlated with the condition of an increase in capital expenditure and an increase in net working capital.
Lo, Wong & Firth (2010)	Corporate governance	RPS	They investigate whether corporate governance constrains manipulated RPS, by a sample of 266 firms listed in Shanghai that issue the gross profits of RPS in 2004.[a]	• Firms that have high levels of board independence, lower ownership concentration, CEO duality, or have financial experts on their audit committees, are less likely to manipulate the price of RPSs. • The quality of corporate governance is important in deterring the use of manipulated transfer prices via RPS.
Hwang, Chiou & Wang (2013)	Earnings management	The relation between discretionary accruals and the firms that disclose RPTs	They examine the effect of disclosure regulation on earnings management using a sample of Taiwanese firms that conduct RPTs with Chinese entities during 1996–2003	• Using the amount of discretionary accruals as a proxy for earnings management, they provide evidence that regulation effectively reduces the discretionary accruals of Taiwanese firms engaging in RPTs with Chinese entities. • The disclosure regulation helps to reduce overall earnings management, and the effect is stronger for firms in non-high-tech industries than in high-tech industries.

Note: a. In 2004, firms listed on the Shanghai Stock Exchange (SSE) were required to disclose the gross profits on related party sale transactions as well as the gross profits on unrelated party sales. However, this regulation was only effective for firms listed on SSE in 2004. There were no such disclosure requirements in previous or later regulation.

Appendix 3: The Regulation of Equity Offerings in China, 1993–current

Date of Guidelines	Effective Period	Profitability Requirements	
		Rights offering	SEO
17 Nov. 1993	1993	Previous two years' positive profits	
30 Sep. 1994	1994–1996	Previous three years' positive profits and three-year average ROE ≥ 10%	
24 Jan. 1996	1996–1998	ROE ≥ 10% in *each* of previous three years	
17 Mar. 1999	1999–2000	Three-year average ROE ≥ 10% and ROE ≥ 6% in *each* of previous three years	Three-year average ROE ≥ 6%
15 Mar. 2001	2001		
24 July. 2002	2002-2005	Three-year average ROE ≥ 6%	Three-year average ROE ≥ 10% and ROE ≥ 10% in the *previous* year
6 May. 2006	2006–current	Three years' positive profits	Three-year average ROE ≥ 6%

This table presents the profitability regulation of new equity offerings during 1993 to 2010. From 2001 to current, SEO and right issue applicants are required to calculate ROE as well as *core ROE* excluding non-recurring items. The lower ROE will be used as the base by the CSRC for the approval of new equity offerings.

Appendix 4: Earnings Management Studies in China

Authors	Tools	Incentives	Research topic	Major findings
Chen & Yuan (2004)	Non-operating items	To beat ROE threshold of right issues	They examine whether regulators are able to see through earnings management via non-operating items during their approval process of rights issue by a sample of 440 right issue applicants during 1996 to 1998	• Listed firms use non-operating items to inflate earnings to beat the regulatory thresholds of rights issues. • Regulators appear to have screen out the use of non-operating items to inflate earnings, and their ability improves across the sample period. • Firms that gain right issues approval perform worse than firms without in the future.
Haw et al. (2005)	Non-operating items, discretionary accruals	To beat ROE threshold of rights issues	They examine whether listed firms manage earnings to meet regulatory benchmarks and whether regulators and investors are able to screen out earnings management during 1996 to 1998	• Listed firms use income-increasing non-operating items and accounting accruals beat the regulatory thresholds of rights issues. • Firms that apply for, but fail to receive, regulatory approval manage earnings more significantly than firms that receive approval. • Investors put less value on earnings suspected of a greater degree of management.
Yu et al. (2006)	Non-operating items	To beat ROE threshold of rights issues	They use a distribution approach to examine the earnings management at ROE thresholds during 1994 to 2002	• Firms use non-operating items to meet the rights issue thresholds during the period
Chen, Lee & Li (2008)	Government subsidies	To beat the ROE threshold of rights issue and avoid delisting	They examine how local governments in China assist listed firms in earnings management to avoid delisting	• Local governments boost their earnings via government subsidies to beat the regulatory threshold of rights offering and delisting

Aharony, Wang & Yuan (2010)	RPS	To inflate the IPO price	They examine whether firms inflate RPT in the period prior to IPOs, by a sample 185 IPOs to be listed in Shanghai during 1999 to 2001	• They providence evidence that RPS of goods and services is used to inflate earnings in the pre-IPO period, and they also provide evidence that the extent of earnings management via RPS in the pre-IPO period is associated with the post-IPO tunnelling via non-payment of corporate loans. • They demonstrate that investors in Chinese IPOs fail to perceive the link between the two phenomena.
Jian and Wong (2010)	RPS	To beat the ROE threshold of rights issue and avoid delisting	They examine whether controlling shareholders in China prop up their listed subsidiaries' earnings by RPS during 1998 to 2002	• Related sales in China are widely used to inflate earnings to beat the earnings target of rights issues and delisting. • Earnings inflation via abnormal RPS propping is more prevalent among state-owned firms and in regions with weaker economic institutions. • Earnings management via abnormal RPS serve as a substitute rather than complement to discretionary accruals. • There is significant cash transfer via related lending from listed firms back to controlling owners after the propping.

Appendix Five: Variable Definitions

Total Asset	=	total assets measured in million RMB
Market Value	=	the price per share times the number of shares outstanding, measured in million RMB
SALE	=	sales measured in million RMB
Cost of Goods Sold	=	cost of goods sold measured in million RMB
Gross Profit	=	sales less cost of goods sold measured in million RMB
RPS	=	RPS measured in million RMB
RPS/SALE	=	*RPS/SALE*
ΔRPS	=	the change in *RPS/SALE* from year t-1 to year t, calculated as $RPS_t/SALE_t - RPS_{t-1}/SALE_{t-1}$
AbsΔRPS	=	the absolute value of ΔRPS
Positive ΔRPS	=	the positive ΔRPS
Negative ΔRPS	=	the negative ΔRPS
$P\Delta RPS$	=	income-increasing RPS, defined as ΔRPS when ΔRPS is positive and 0 otherwise
$N\Delta RPS$	=	income-decreasing RPS, defined as ΔRPS when ΔRPS is negative and 0 otherwise
ERPS	=	the difference between $RPS_t/SALE_t$ for firm i and the industry-mean level of $RPS_t/SALE_t$ excluding the own observation for which I calculate the measure
AbsERPS	=	the absolute value of *ERPS*
Positive ERPS	=	the positive *ERPS*
Negative ERPS	=	the negative *ERPS*
PERPS	=	*ERPS* when *ERPS* is positive and 0 otherwise
NERPS	=	*ERPS* when *ERPS* is negative and 0 otherwise
Gross Margin	=	gross profits divided by sales, calculated as $GrossProfit_t/SALE_t$
ΔGM	=	the change in gross margin from year t-1 to year t, calculated as $GrossProfit_t/SALE_t - GrossProfit_{t-1}/SALE_{t-1}$
EGM	=	the difference between $GrossProfit_t/SALE_t$ for the firm and the industry-mean level of $GrossProfit_t/SALE_t$ excluding the own observation for which the measure is calculated
$\Delta COGS$	=	the change in cost of goods sold form year t-1 to year t, calculated as $(COGS_t - COGS_{t-1})/COGS_{t-1}$
MTB	=	the market-to-book ratio
PPE	=	the log form of PPE
ΔPPE	=	the change in the log form of *PPE* from year t-1 to year t
INTAN	=	the log form of intangible assets (*INTAN*) in year t-1
$\Delta INTAN$	=	the change in the log form of intangible assets from year t-1 to year t
EXP	=	the lagged selling expenses (*EXP*), measured by $EXP_{t-1}/SALE_{t-1}$
LEV	=	the long-term debt deflated by total assets
ΔLEV	=	the change in *LEV*

SIZE	=	the log form of market value
$\Delta SIZE$	=	the change in SIZE from year t-1 to year t
ROE	=	the ROE ratio, calculated as earnings before tax divided by ending equity
OWNCON	=	share owned by the largest shareholder scaled by total shares
BORDIND	=	number of independent directors divided by total directors
FOREIGN	=	1 if the firm has foreign ownership and 0 otherwise
BIG8	=	1 if there is a big-8 audit firm and 0 otherwise
CEODUAL	=	1 if the CEO and chairman is the same person and 0 otherwise
SUSPECT	=	calculated as 1 if ROE_t is more than the regulatory thresholds of new equity offerings and (1) $PROE_t$ (ROE_t excluding ΔRPS_t and its associated $COGS_t$) is less than the regulatory thresholds for the change model; (2) $PROE_t$ (ROE_t excluding $ERPS_t$ and its associated $COGS_t$) is less than the regulatory thresholds for the cross-sectional model; and 0 otherwise
ST	=	calculated as 1 if ROE_t is positive but less than the regulatory thresholds of new equity offerings and (1) $PROE_t$ (ROE_t excluding ΔRPS_t and its associated $COGS_t$) is negative for the change model; (2) $PROE_t$ (ROE_t excluding $ERPS_t$ and its associated $COGS_t$) is negative for the cross-sectional model, and 0 otherwise
TRAN	=	1 if the year is 2002 and 0 otherwise
POST	=	1 if years are 2003, 2004, 2005 and 0 otherwise
ΔRPP	=	the change in RPP from year t-1 to year t, calculated as $RPP_t/SALE_t - RPP_{t-1}/SALE_{t-1}$
$N\Delta RPP$	=	income-increasing *RPP*, defined as ΔRPP when ΔRPP is negative and 0 otherwise
ERPP	=	the difference between $RPP_t/SALE_t$ for firm i and the industry-mean level of $RPP_t/SALE_t$ excluding the own observation for which I calculate the measure
NERPP	=	*ERPP* when *ERPP* is negative and 0 otherwise
$\Delta SALE$	=	the change in sales revenues form year t-1 to year t, calculated as $(SALE_t - SALE_{t-1})/SALE_{t-1}$
IND	=	dummy variables indicating industry sector membership
YEAR	=	dummies for years

Appendix Six: The Use of RPS to Inflate Transaction Price Change Model; Using the Actual Change in *RPS* (ΔRPS_t); Dependent variable = ΔGM_t

VARIABLES	PREDICTED SIGNS	FULL (2000–2005)	PRE (2000–2001)	TRAN (2002)	POST (2003–2005)
ΔRPS_t	?	-0.010	0.019	0.008	-0.035
		(0.373)	(0.186)	(0.797)	(0.169)
GM_{t-1}	-	-0.276***	-0.266***	-0.302***	-0.271***
		(<0.001)	(<0.001)	(<0.001)	(<0.001)
ΔGM_{t-1}	-	-0.050	-0.062**	-0.050	-0.066
		(0.196)	(0.037)	(0.446)	(0.433)
$\Delta COGS_t$	-	-0.038***	-0.032***	-0.036***	-0.047***
		(<0.001)	(<0.001)	(<0.001)	(<0.001)
MTB_{t-1}	+	0.006	0.008	0.005	-0.001
		(0.296)	(0.124)	(0.575)	(0.915)
PPE_{t-1}	+	-0.001	0.001	-0.001	-0.001
		(0.810)	(0.778)	(0.905)	(0.791)
ΔPPE_t	+	0.014**	0.014*	0.009	0.015*
		(0.014)	(0.080)	(0.468)	(0.067)
$INTAN_{t-1}$	+	-0.001	-0.000	-0.001	-0.001
		(0.239)	(0.338)	(0.884)	(0.278)
$\Delta INTAN_t$	+	-0.000	-0.001	-0.002	0.001
		(0.690)	(0.207)	(0.270)	(0.398)
EXP_{t-1}	+	0.250***	0.199***	0.219***	0.294**
		(<0.001)	(<0.001)	(0.004)	(0.014)
LEV_{t-1}	?	-0.026	0.007	0.038	-0.039
		(0.136)	(0.614)	(0.105)	(0.130)
$SIZE_{t-1}$	?	-0.004	-0.009**	-0.017*	-0.002
		(0.319)	(0.049)	(0.072)	(0.709)
Constant		0.099*	0.240***	0.463***	-0.009
		(0.062)	(0.001)	(0.001)	(0.922)
IND		Y	Y	Y	Y
YEAR		Y	Y	N	Y
n		3,947	1,316	659	1,972
Adj. R^2		0.143	0.206	0.261	0.122

This table presents the results of the use of RPS to inflate the transaction price, based on the change model. ΔGM_t is the change in gross margin from year t-1 to year t, measured as $GrossProfit_t/SALE_t$ - $GrossProfit_{t-1}/SALE_{t-1}$. $P\Delta RPS_t$ is the income-increasing RPS, calculated as $RPS_t/SALE_t$ - $RPS_{t-1}/SALE_{t-1}$ when ($RPS_t/SALE_t$ - $RPS_{t-1}/SALE_{t-1}$) is positive and 0 otherwise. Other control variables are defined in the Appendix Five. All continuous variables are winsorised at the 1% and 99% levels. Two-tailed p-values are based on robust t-statistics that have been adjusted to control for the clustering by firm. ***,**,* signify statistical significance of two-tailed tests at 1%, 5%, and 10% respectively.

Appendix Seven

Table A7: The Use of RPS to Inflate Transaction Price–Change Model; Control for Income-Decreasing RPS; Dependent Variable = ΔGM_t

VARIABLES	PREDICTED SIGNS	FULL (2000–2005)	PRE (2000–2001)	TRAN (2002)	POST (2003–2005)
$P\Delta RPS_t$	+	0.010	0.050***	0.046	-0.053
		(0.567)	(0.008)	(0.148)	(0.119)
$N\Delta RPS_t$	?	-0.026	-0.033	-0.032	-0.022
		(0.103)	(0.151)	(0.201)	(0.405)
GM_{t-1}	-	-0.275***	-0.264***	-0.300***	-0.271***
		(<0.001)	(<0.001)	(<0.001)	(<0.001)
ΔGM_{t-1}	-	-0.051	-0.066**	-0.052	-0.065
		(0.190)	(0.030)	(0.427)	(0.434)
$\Delta COGS_t$	-	-0.038***	-0.032***	-0.037***	-0.046***
		(<0.001)	(<0.001)	(<0.001)	(<0.001)
MTB_{t-1}	+	0.005	0.007	0.005	-0.001
		(0.315)	(0.148)	(0.549)	(0.933)
PPE_{t-1}	+	-0.001	0.001	-0.001	-0.001
		(0.794)	(0.837)	(0.873)	(0.788)
ΔPPE_t	+	0.014**	0.014*	0.009	0.015*
		(0.014)	(0.081)	(0.469)	(0.067)
$INTAN_{t-1}$	+	-0.001	-0.001	0.001	-0.001
		(0.269)	(0.466)	(0.961)	(0.259)
$\Delta INTAN_t$	+	-0.000	-0.000	-0.000	0.001
		(0.724)	(0.234)	(0.299)	(0.413)
EXP_{t-1}	-	0.252***	0.205***	0.225***	0.293**
		(<0.001)	(<0.001)	(0.003)	(0.014)
LEV_{t-1}	?	-0.026	0.009	0.038	-0.039
		(0.144)	(0.520)	(0.104)	(0.128)
$SIZE_{t-1}$	?	-0.004	-0.009**	-0.017*	-0.002
		(0.315)	(0.049)	(0.085)	(0.726)
Constant		0.099*	0.240***	0.447***	-0.010
		(0.063)	(0.001)	(0.001)	(0.913)
IND		Y	Y	Y	Y
YEAR		Y	Y	N	Y
n		3,947	1,316	659	1,972
Adj. R^2		0.143	0.210	0.263	0.122

This table presents the results of the use of RPS to inflate the transaction price, based on the change model. ΔGM_t is the change in gross margin from year t-1 to year t, measured as $GrossProfit_t/SALE_t$ - $GrossProfit_{t-1}/SALE_{t-1}$. $P\Delta RPS_t$ is the income-increasing RPS, calculated as $RPS_t/SALE_t$ - $RPS_{t-1}/SALE_{t-1}$ when ($RPS_t/SALE_t$ - $RPS_{t-1}/SALE_{t-1}$) is positive and 0 otherwise. $N\Delta RPS_t$ is the income-decreasing RPS, calculated as $RPS_t/SALE_t$ - $RPS_{t-1}/SALE_{t-1}$ when ($RPS_t/SALE_t$ - $RPS_{t-1}/SALE_{t-1}$) is negative and 0 otherwise. Other control variables are defined in the Appendix Five. All continuous variables are winsorised at the 1% and 99% levels. Two-tailed p-values are based on robust t-statistics that have been adjusted to control for the clustering by firm. ***,**,*Signify statistical significance of two-tailed tests at 1%, 5%, and 10% respectively.

Appendix Eight

Table A8: The Use of RPS to Inflate Transaction Price—Change Model; Excluding ΔGMt-1; Dependent Variable = ΔGMt

VARIABLES	PREDICTED SIGNS	FULL (1999–2005)	PRE (1999–2001)	TRAN (2002)	POST (2003–2005)
$P\Delta RPS_t$	+	0.011	0.042**	0.040	-0.055
		(0.504)	(0.023)	(0.200)	(0.310)
GM_{t-1}	-	-0.300***	-0.282***	-0.311***	-0.294***
		(<0.001)	(<0.001)	(<0.001)	(<0.001)
$\Delta COGS_t$	-	-0.037***	-0.032***	-0.037***	-0.046***
		(<0.001)	(<0.001)	(<0.001)	(<0.001)
MTB_{t-1}	+	0.007	0.007	0.005	-0.001
		(0.140)	(0.180)	(0.573)	(0.969)
PPE_{t-1}	+	-0.000	0.000	-0.001	-0.001
		(0.931)	(0.905)	(0.871)	(0.742)
ΔPPE_t	+	0.013**	0.014*	0.009	0.014*
		(0.013)	(0.075)	(0.433)	(0.077)
$INTAN_{t-1}$	+	-0.001	-0.001	0.001	-0.001
		(0.140)	(0.530)	(0.975)	(0.258)
$\Delta INTAN_t$	+	-0.000	-0.000	-0.001	0.001
		(0.643)	(0.225)	(0.295)	(0.439)
EXP_{t-1}	+	0.284***	0.212***	0.219***	0.313**
		(<0.001)	(<0.001)	(0.005)	(0.027)
LEV_{t-1}	?	-0.029*	0.002	0.034	-0.042
		(0.077)	(0.883)	(0.136)	(0.108)
$SIZE_{t-1}$	?	-0.002	-0.009*	-0.016*	-0.001
		(0.515)	(0.073)	(0.091)	(0.828)
Constant		0.074	0.238***	0.448***	-0.010
		(0.133)	(0.001)	(0.001)	(0.909)
IND		Y	Y	Y	Y
YEAR		Y	Y	N	Y
n		4,606	1,975	659	1,972
Adj. R^2		0.153	0.205	0.262	0.120

This table presents the results of the use of RPS to inflate the transaction price, based on the change model. ΔGM_t is the change in gross margin from year t-1 to year t, measured as $GrossProfit_t/SALE_t$ - $GrossProfit_{t-1}/SALE_{t-1}$. $P\Delta RPS_t$ is the income-increasing RPS, calculated as $RPS_t/SALE_t$ - $RPS_{t-1}/SALE_{t-1}$ when ($RPS_t/SALE_t$ - $RPS_{t-1}/SALE_{t-1}$) is positive and 0 otherwise. Other control variables are defined in the Appendix Five. All continuous variables are winsorised at the 1% and 99% levels. Two-tailed p-values are based on robust t-statistics that have been adjusted to control for the clustering by firm. ***,**,* signify statistical significance of two-tailed tests at 1%, 5%, and 10% respectively.

Appendix Nine

Table A9: The Use of RPS to Inflate Transaction Price—Change Model; ROE ⩾ Thresholds; Dependent Variable = ΔGMt

VARIABLES	PREDICTED SIGNS	FULL (2000–2005)	PRE (2000–2001)	TRAN (2002)	POST (2003–2005)
$P\Delta RPS_t$	+	0.052**	0.075***	0.086**	-0.016
		(0.047)	(<0.001)	(0.019)	(0.782)
GM_{t-1}	-	-0.323***	-0.303***	-0.374***	-0.324***
		(<0.001)	(<0.001)	(<0.001)	(<0.001)
ΔGM_{t-1}	-	-0.039	-0.074**	-0.058	-0.061
		(0.473)	(0.047)	(0.406)	(0.629)
$\Delta COGS_t$	-	-0.040***	-0.037***	-0.032***	-0.045***
		(<0.001)	(<0.001)	(0.003)	(<0.001)
MTB_{t-1}	+	<0.001	0.010	0.004	-0.027
		(0.955)	(0.133)	(0.670)	(0.243)
PPE_{t-1}	+	-0.003	0.002	-0.003	-0.010*
		(0.359)	(0.723)	(0.692)	(0.061)
ΔPPE_t	+	0.012	0.007	-0.016	0.026*
		(0.105)	(0.447)	(0.185)	(0.061)
$INTAN_{t-1}$	+	-0.001	-0.001	0.001	-0.002
		(0.265)	(0.585)	(0.561)	(0.209)
$\Delta INTAN_t$	+	-0.002**	-0.002**	-0.003	-0.002
		(0.031)	(0.037)	(0.208)	(0.469)
EXP_{t-1}	?	0.307***	0.234***	0.190**	0.362**
		(0.008)	(0.002)	(0.045)	(0.032)
LEV_{t-1}	?	-0.045*	0.003	0.024	-0.058
		(0.091)	(0.840)	(0.481)	(0.108)
$SIZE_{t-1}$	?	-0.005	-0.014**	-0.013	-0.001
		(0.302)	(0.023)	(0.214)	(0.922)
Constant		0.099*	0.242***	0.452***	-0.012
		(0.063)	(0.001)	(0.001)	(0.896)
IND		Y	Y	Y	Y
YEAR		Y	Y	N	Y
n		2,005	792	306	907
Adj. R^2		0.157	0.313	0.423	0.113

This table presents the results of the use of RPS to inflate the transaction price, based on the change model. Observations with sufficient data to calculate the dependent or independent variables are included. ΔGM_t is the change in gross margin from year t-1 to year t, measured as $GrossProfit_t/SALE_t$ - $GrossProfit_{t-1}/SALE_{t-1}$. $P\Delta RPS_t$ is the income-increasing RPS, calculated as $RPS_t/SALE_t$ - $RPS_{t-1}/SALE_{t-1}$ when ($RPS_t/SALE_t$ - $RPS_{t-1}/SALE_{t-1}$) is positive and 0 otherwise. Other control variables are defined in the Appendix Five. All continuous variables are winsorised at the 1% and 99% levels. Two-tailed p-values are based on robust t-statistics that have been adjusted to control for the clustering by firm. ***,**,* signify statistical significance of two-tailed tests at 1%, 5%, and 10% respectively.

Appendix Ten

Table A10: The Use of RPS to Inflate Transaction Price—Level Model; Using Actual Level of *ERPS* ($ERPS_t$); Dependent Variable = EGM_t

VARIABLES	PREDICTED SIGNS	FULL (1999–2005)	PRE (1999–2001)	TRAN (2002)	POST (2003–2005)
$ERPS_t$	+	0.007	0.022**	0.018	-0.018
		(0.398)	(0.011)	(0.430)	(0.276)
EGM_{t-1}	+	0.694***	0.703***	0.685***	0.701***
		(<0.001)	(<0.001)	(<0.001)	(<0.001)
$\Delta COGS_t$	-	-0.035***	-0.030***	-0.037***	-0.044***
		(<0.001)	(<0.001)	(<0.001)	(<0.001)
MTB_{t-1}	+	0.007	0.010**	0.004	-0.001
		(0.132)	(0.041)	(0.663)	(0.934)
PPE_{t-1}	+	-0.002	-0.001	-0.004	-0.003
		(0.485)	(0.940)	(0.616)	(0.417)
$INTAN_{t-1}$	+	-0.001	-0.001	0.001	-0.001
		(0.205)	(0.439)	(0.551)	(0.134)
EXP_{t-1}	+	0.289***	0.273***	0.228***	0.307**
		(<0.001)	(<0.001)	(0.005)	(0.029)
LEV_{t-1}	?	-0.030*	-0.003	0.035	-0.043
		(0.072)	(0.835)	(0.161)	(0.107)
$SIZE_{t-1}$	?	0.001	-0.004	-0.015	0.002
		(0.978)	(0.364)	(0.120)	(0.714)
Constant		-0.005	0.066	0.360***	-0.042
		(0.926)	(0.329)	(0.009)	(0.665)
IND		Y	Y	Y	Y
YEAR		Y	Y	N	Y
n		4,606	1,975	659	1,972
Adj. R^2		0.483	0.584	0.530	0.392

This table presents the results of the use of RPS to inflate the transaction price, based on the level model. EGM_t is the difference between $GrossProfit_t/SALE_t$ for firm i and the industry-mean level of $GrossProfit_t/SALE_t$ excluding the own observation for which I calculate the measure. *ERPS* is the difference between $RPS_t/SALE_t$ for firm i and the industry-mean level of $RPS_t/SALE_t$ excluding the own observation for which I calculate the measure. *PERPS* is the positive *ERPS* when *ERPS* is positive and 0 otherwise. Other control variables are defined in the Appendix Five. All continuous variables are winsorised at the 1% and 99% levels. Two-tailed p-values are based on robust t-statistics that have been adjusted to control for the clustering by firm. ***,**,* signify statistical significance of two-tailed tests at 1%, 5%, and 10% respectively.

Appendix Eleven

Table A11: The Use of RPS to Inflate Transaction Price—Level Model Controlling for Negative *ERPS*; Dependent Variable = EGM_t

VARIABLES	PREDICTED SIGNS	FULL (1999–2005)	PRE (1999–2001)	TRAN (2002)	POST (2003–2005)
$PERPS_t$	+	0.021*	0.041***	0.058**	-0.008
		(0.097)	(0.001)	(0.031)	(0.746)
$NERPS_t$	?	-0.045	-0.051	-0.137*	-0.058
		(0.163)	(0.168)	(0.087)	(0.245)
EGM_{t-1}	-	0.694***	0.703***	0.687***	0.700***
		(<0.001)	(<0.001)	(<0.001)	(<0.001)
$\Delta COGS_t$	-	-0.034***	-0.030***	-0.037***	-0.044***
		(<0.001)	(<0.001)	(<0.001)	(<0.001)
MTB_{t-1}	+	0.007	0.010**	0.004	-0.001
		(0.135)	(0.043)	(0.648)	(0.935)
PPE_{t-1}	+	-0.002	-0.001	-0.003	-0.003
		(0.491)	(0.965)	(0.662)	(0.416)
$INTAN_{t-1}$	+	-0.001	-0.001	0.001	-0.001
		(0.214)	(0.449)	(0.580)	(0.137)
EXP_{t-1}	+	0.288***	0.270***	0.214***	0.307**
		(<0.001)	(<0.001)	(0.009)	(0.029)
LEV_{t-1}	?	-0.030*	-0.003	0.035	-0.044
		(0.073)	(0.841)	(0.156)	(0.107)
$SIZE_{t-1}$	?	0.001	-0.004	-0.015	0.002
		(0.933)	(0.396)	(0.134)	(0.696)
Constant		-0.013	0.053	0.324**	-0.045
		(0.812)	(0.433)	(0.017)	(0.645)
IND		Y	Y	Y	Y
YEAR		Y	Y	N	Y
n		4,606	1,975	659	1,972
Adj. R^2		0.483	0.584	0.532	0.392

This table presents the results of the use of RPS to inflate the transaction price, based on the level model. EGM_t is the difference between $GrossProfit_t/SALE_t$ for firm i and the industry-mean level of $GrossProfit_t/SALE_t$ excluding the own observation for which I calculate the measure. *ERPS* is the difference between $RPS_t/SALE_t$ for firm i and the industry-mean level of $RPS_t/SALE_t$ excluding the own observation for which I calculate the measure. *PERPS* is the positive *ERPS* when *ERPS* is positive and 0 otherwise. *NERPS* is the negasitive *ERPS* when *ERPS* is negative and 0 otherwise. Other control variables are defined in the Appendix Five. All continuous variables are winsorised at the 1% and 99% levels. Two-tailed p-values are based on robust t-statistics that have been adjusted to control for the clustering by firm. ***,**,*Signify statistical significance of two-tailed tests at 1%, 5%, and 10% respectively.

Appendix Twelve

Table A12: The Use of RPS to Inflate Transaction Price—Level Model

ROE ≥ Thresholds; Dependent Variable = EGM_t

VARIABLES	PREDICTED SIGNS	FULL (1999–2005)	PRE (1999–2001)	TRAN (2002)	POST (2003–2005)
$PERPS_t$	+	0.050***	0.067***	0.073***	0.016
		(<0.001)	(<0.001)	(0.009)	(0.646)
EGM_{t-1}	+	0.654***	0.649***	0.568***	0.680***
		(<0.001)	(<0.001)	(<0.001)	(<0.001)
$\Delta COGS_t$	-	-0.037***	-0.037***	-0.035***	-0.042***
		(<0.001)	(<0.001)	(0.001)	(<0.001)
MTB_{t-1}	+	0.002	0.011*	0.008	-0.026
		(0.690)	(0.064)	(0.435)	(0.283)
PPE_{t-1}	+	-0.003	0.001	-0.001	-0.011**
		(0.364)	(0.800)	(0.944)	(0.016)
$INTAN_{t-1}$	+	<0.001	<0.001	0.002*	-0.001
		(0.837)	(0.345)	(0.081)	(0.385)
EXP_{t-1}	+	0.351***	0.348***	0.290***	0.378**
		(0.001)	(<0.001)	(0.003)	(0.045)
LEV_{t-1}	?	-0.044*	-0.005	0.022	-0.061*
		(0.062)	(0.775)	(0.548)	(0.088)
$SIZE_{t-1}$	?	-0.003	-0.008	-0.018*	-0.001
		(0.536)	(0.203)	(0.082)	(0.989)
Constant		0.105	0.139	0.359*	0.171
		(0.191)	(0.124)	(0.050)	(0.240)
IND		Y	Y	Y	Y
YEAR		Y	Y	N	Y
n		2,491	1,278	306	907
Adj. R^2		0.447	0.576	0.485	0.355

This table presents the results of the use of RPS to inflate the transaction price, based on the level model. EGM_t is the difference between $GrossProfit_t/SALE_t$ for firm i and the industry-mean level of $GrossProfit_t/SALE_t$ excluding the own observation for which I calculate the measure. *ERPS* is the difference between $RPS_t/SALE_t$ for firm i and the industry-mean level of $RPS_t/SALE_t$ excluding the own observation for which I calculate the measure. *PERPS* is the positive *ERPS* when *ERPS* is positive and 0 otherwise. Other control variables are defined in the Appendix Five. All continuous variables are winsorised at the 1% and 99% levels. Two-tailed p-values are based on robust t-statistics that have been adjusted to control for the clustering by firm. ***,**,*Signify statistical significance of two-tailed tests at 1%, 5%, and 10% respectively.

Appendix Thirteen

Table A13: Earnings Management Incentive—Change Model

$\Delta RPS > 0$; Dependent Variable = ΔRPS_t

VARIABLES	PREDICTED SIGNS	FULL (2000–2005)	PRE (2000–2001)	TRAN (2002)	POST (2003–2005)
$SUSPECT_t$	+	0.154***	0.177***	0.137***	0.129***
		(<0.001)	(<0.001)	(<0.001)	(<0.001)
ST_t	+	0.188***	0.154***	0.251***	0.169***
		(<0.001)	(0.007)	(<0.001)	(<0.001)
RPS_{t-1}	-	0.056**	0.129***	0.004	0.029
		(0.035)	(0.006)	(0.937)	(0.274)
ΔRPS_{t-1}	-	-0.180***	-0.256***	-0.091	-0.167***
		(<0.001)	(0.001)	(0.168)	(0.003)
$\Delta SIZE_t$	?	-0.027	-0.023	0.046	-0.047*
		(0.227)	(0.681)	(0.371)	(0.083)
ΔLEV_t	?	0.037	-0.077	-0.078	0.094
		(0.457)	(0.296)	(0.298)	(0.158)
MTB_{t-1}	?	0.016*	-0.004	0.069***	0.024
		(0.053)	(0.704)	(0.002)	(0.129)
Constant		0.020	0.112*	-0.089**	-0.053*
		(0.384)	(0.098)	(0.024)	(0.070)
IND		Y	Y	Y	Y
YEAR		Y	Y	N	Y
n		1,442	433	248	761
Adj. R^2		0.297	0.309	0.388	0.271

This table reports regression results of whether firms inflate RPSs when there are earnings management incentives, based on the change model. ΔRPS_t is the change in *RPS/SALE* from year t-1 to year t, calculated as $RPS_t/SALE_t$ - $RPS_{t-1}/SALE_{t-1}$. RPS_{t-1} is defined as $RPS_{t-1}/SALE_{t-1}$. $SUSPECT_t$ takes 1 if ROE_t is more than the regulatory thresholds of new equity offerings but $PROE_t$ is less than the regulatory thresholds, and 0 otherwise. ST_t takes 1 if if ROE_t is positive and less than the regulatory thresholds of new equity offerings but $PROE_t$ is negative, and 0 otherwise. Other control variables are defined Appendix Five. All continuous variables are winsorised at the 1% and 99% levels. Two-tailed p-values are based on robust t-statistics that have been adjusted to control for the clustering by firm. ***,**,*Signify statistical significance of two-tailed tests at 1%, 5%, and 10% respectively.

Appendix Fourteen

Table A14: Earnings Management Incentive—Change Model

ROE ⩾ Thresholds; Dependent Variable = ΔPS_t

VARIABLES	PREDICTED SIGNS	FULL (2000–2005)	PRE (2000–2001)	TRAN (2002)	POST (2003–2005)
$SUSPECT_t$	+	0.238***	0.284***	0.229***	0.187***
		(<0.001)	(<0.001)	(<0.001)	(<0.001)
RPS_{t-1}	-	-0.292***	-0.312***	-0.277***	-0.269***
		(<0.001)	(<0.001)	(<0.001)	(<0.001)
ΔRPS_{t-1}	-	-0.139***	-0.192***	0.003	-0.159***
		(<0.001)	(0.001)	(0.962)	(0.001)
$\Delta SIZE_t$	-	0.003	0.026	-0.004	-0.025
		(0.793)	(0.304)	(0.938)	(0.195)
ΔLEV_t	?	-0.016	-0.017	-0.003	-0.033
		(0.504)	(0.538)	(0.940)	(0.334)
MTB_{t-1}	?	-0.002	-0.005	0.020*	-0.021*
		(0.761)	(0.543)	(0.091)	(0.058)
Constant		-0.038**	-0.025	-0.034	-0.033
		(0.021)	(0.471)	(0.129)	(0.455)
IND		Y	Y	Y	Y
YEAR		Y	Y	N	Y
n		2,005	792	306	907
Adj. R^2		0.414	0.486	0.399	0.356

This table reports regression results of whether firms inflate RPSs when there are earnings management incentives, based on the change model. ΔRPS_t is the change in *RPS/SALE* from year t-1 to year t, calculated as $RPS_t/SALE_t$ - $RPS_{t-1}/SALE_{t-1}$. RPS_{t-1} is defined as $RPS_{t-1}/SALE_{t-1}$. $SUSPECT_t$ takes 1 if ROE_t is more than the regulatory thresholds of new equity offerings but $PROE_t$ is less than the regulatory thresholds, and 0 otherwise. ST_t takes 1 if if ROE_t is positive and less than the regulatory thresholds of new equity offerings but $PROE_t$ is negative, and 0 otherwise. Other control variables are defined Appendix Five. All continuous variables are winsorised at the 1% and 99% levels. Two-tailed p-values are based on robust t-statistics that have been adjusted to control for the clustering by firm. ***,**,*Signify statistical significance of two-tailed tests at 1%, 5%, and 10% respectively.

Appendix Fifteen

Table A15: Earnings Management Incentive—Change Model; Controlling For ROE; Dependent Variable = ΔRPS_t

VARIABLES	PREDICTED SIGNS	FULL (2000–2005)	PRE (2000–2001)	TRAN (2002)	POST (2003–2005)
$SUSPECT_t$	+	0.234***	0.276***	0.233***	0.188***
		(<0.001)	(<0.001)	(<0.001)	(<0.001)
ST_t	+	0.259***	0.249***	0.327***	0.228***
		(<0.001)	(<0.001)	(<0.001)	(<0.001)
RPS_{t-1}	-	-0.289***	-0.312***	-0.319***	-0.251***
		(<0.001)	(<0.001)	(<0.001)	(<0.001)
ΔRPS_{t-1}	-	-0.103***	-0.113***	-0.043	-0.124***
		(<0.001)	(0.006)	(0.381)	(<0.001)
$\Delta SIZE_t$	?	-0.007	-0.011	0.001	-0.006
		(0.518)	(0.605)	(0.981)	(0.642)
ΔLEV_t	?	-0.059**	-0.024	-0.155*	-0.064**
		(0.014)	(0.503)	(0.052)	(0.018)
MTB_{t-1}	?	-0.005	-0.009	0.013	-0.017**
		(0.212)	(0.144)	(0.242)	(0.041)
ROE_t		-0.001	0.003	0.003	-0.004
		(0.471)	(0.573)	(0.435)	(0.140)
Constant		-0.005	0.019	-0.033	-0.021
		(0.630)	(0.448)	(0.221)	(0.367)
IND		Y	Y	Y	Y
YEAR		Y	Y	N	Y
n		3,950	1,318	660	1,972
Adj. R^2		0.375	0.398	0.440	0.331

This table reports regression results of whether firms inflate RPSs when there are earnings management incentives, based on the change model. ΔRPS_t is the change in *RPS/SALE* from year t-1 to year t, calculated as $RPS_t/SALE_t$ - $RPS_{t-1}/SALE_{t-1}$. RPS_{t-1} is defined as $RPS_{t-1}/SALE_{t-1}$. $SUSPECT_t$ takes 1 if ROE_t is more than the regulatory thresholds of new equity offerings but $PROE_t$ is less than the regulatory thresholds, and 0 otherwise. ST_t takes 1 if if ROE_t is positive and less than the regulatory thresholds of new equity offerings but $PROE_t$ is negative, and 0 otherwise. Other control variables are defined Appendix Five. All continuous variables are winsorised at the 1% and 99% levels. Two-tailed p-values are based on robust t-statistics that have been adjusted to control for the clustering by firm. ***,**,*Signify statistical significance of two-tailed tests at 1%, 5%, and 10% respectively.

Appendix Sixteen

Table A16: Earnings Management Incentive—Change Model; Excluding ΔRPS_{t-1}; Dependent Variable = ΔRPS_t

VARIABLES	PREDICTED SIGNS	FULL (1999–2005)	PRE (1999–2005)	TRAN (2002)	POST (2003–2005)
$SUSPECT_t$	+	0.248***	0.281***	0.235***	0.193***
		(<0.001)	(<0.001)	(<0.001)	(<0.001)
ST_t	+	0.257***	0.248***	0.327***	0.230***
		(<0.001)	(<0.001)	(<0.001)	(<0.001)
RPS_{t-1}	-	-0.320***	-0.326***	-0.333***	-0.302***
		(<0.001)	(<0.001)	(<0.001)	(<0.001)
$\Delta SIZE_t$	?	-0.013	-0.002	-0.021	-0.022*
		(0.147)	(0.868)	(0.631)	(0.087)
ΔLEV_t	?	-0.029	-0.038	-0.064	-0.023
		(0.132)	(0.168)	(0.170)	(0.395)
MTB_{t-1}	?	-0.006	-0.009*	0.008	-0.014*
		(0.102)	(0.066)	(0.403)	(0.055)
Constant		-0.004	0.009	-0.032	-0.017
		(0.652)	(0.622)	(0.255)	(0.413)
IND		Y	Y	Y	Y
YEAR		Y	Y	N	Y
n		4,607	1,975	660	1,972
Adj. R^2		0.373	0.402	0.436	0.308

This table reports regression results of whether firms inflate RPSs when there are earnings management incentives, based on the change model. ΔRPS_t is the change in *RPS/SALE* from year t-1 to year t, calculated as $RPS_t/SALE_t$ - $RPS_{t-1}/SALE_{t-1}$. RPS_{t-1} is defined as $RPS_{t-1}/SALE_{t-1}$. $SUSPECT_t$ takes 1 if ROE_t is more than the regulatory thresholds of new equity offerings but $PROE_t$ is less than the regulatory thresholds and 0 otherwise. ST_t takes 1 if if ROE_t is positive and less than the regulatory thresholds of new equity offerings but $PROE_t$ is negative and 0 otherwise. Other control variables are defined Appendix Five. All continuous variables are winsorised at the 1% and 99% levels. Two-tailed p-values are based on robust t-statistics that have been adjusted to control for the clustering by firm. ***,**,*Signify statistical significance of two-tailed tests at 1%, 5%, and 10% respectively.

Appendix Seventeen

Table A17: Earnings Management Incentive—Level Model *ERPS* > 0; Dependent Variable = $ERPS_t$

VARIABLES	PREDICTED SIGNS	FULL (1999–2005)	PRE (1999–2005)	TRAN (2002)	POST (2003–2005)
$SUSPECT_t$	+	0.168***	0.217***	0.190***	0.101***
		(<0.001)	(<0.001)	(<0.001)	(<0.001)
ST_t	+	0.172***	0.202***	0.255***	0.102***
		(<0.001)	(<0.001)	(<0.001)	(<0.001)
$ERPS_{t-1}$	+	0.409***	0.342***	0.349***	0.505***
		(<0.001)	(<0.001)	(<0.001)	(<0.001)
$SIZE_t$	?	-0.011	-0.006	-0.001	-0.013
		(0.261)	(0.702)	(0.984)	(0.190)
LEV_t	?	0.001	-0.052	-0.100	0.033
		(0.964)	(0.343)	(0.199)	(0.418)
MTB_{t-1}	?	-0.007	-0.046***	0.050	-0.013
		(0.543)	(0.007)	(0.114)	(0.546)
Constant		0.282	0.252	0.154	0.263
		(0.173)	(0.465)	(0.773)	(0.235)
IND		Y	Y	Y	Y
YEAR		Y	Y	N	Y
n		1,173	518	166	489
Adj. R^2		0.555	0.509	0.600	0.609

This table reports the results of whether firms inflate RPSs when there are earnings management incentives, using the level model. $ERPS_t$ is the difference between $RPS_t/SALE_t$ for firm i and the industry-mean level of $RPS_t/SALE_t$ excluding the own observation for which I calculate the measure. $SUSPECT_t$ takes 1 if ROE_t is more than the regulatory thresholds of new equity offerings but $PROE_t$ is less than the regulatory thresholds and 0 otherwise. ST_t takes 1 if if ROE_t is positive but less than the regulatory thresholds of new equity offerings and $PROE_t$ is negative and 0 otherwise. Other control variables are defined Appendix Five. All continuous variables are winsorised at the 1% and 99% levels. Two-tailed p-values are based on robust t-statistics that have been adjusted to control for the clustering by firm. ***,**,* signify statistical significance of two-tailed tests at 1%, 5%, and 10% respectively.

Appendix Eighteen

Table A18: Earnings Management Incentive—Level Model; ROE ⩾ Thresholds; Dependent Variable = $ERPS_t$

VARIABLES	PREDICTED SIGNS	FULL (1999–2005)	PRE (1999–2005)	TRAN (2002)	POST (2003–2005)
$SUSPECT_t$	+	0.349***	0.404***	0.339***	0.271***
		(<0.001)	(<0.001)	(<0.001)	(<0.001)
$ERPS_{t-1}$	+	0.375***	0.329***	0.381***	0.438***
		(<0.001)	(<0.001)	(<0.001)	(<0.001)
$SIZE_t$	?	0.007*	0.013**	-0.007	0.005
		(0.066)	(0.034)	(0.432)	(0.250)
LEV_t	?	0.009	-0.012	-0.018	0.006
		(0.295)	(0.477)	(0.456)	(0.546)
MTB_{t-1}	?	-0.003	-0.006	0.015	-0.013
		(0.542)	(0.232)	(0.159)	(0.242)
Constant		-0.215***	-0.332**	0.129	-0.177
		(0.009)	(0.011)	(0.499)	(0.138)
IND		Y	Y	Y	Y
YEAR		Y	Y	N	Y
n		2,492	1,279	306	907
Adj. R^2		0.726	0.758	0.745	0.678

This table reports the results of whether firms inflate RPSs when there are earnings management incentives, using the level model. $ERPS_t$ is the difference between $RPS_t/SALE_t$ for firm i and the industry-mean level of $RPS_t/SALE_t$ excluding the own observation for which I calculate the measure. $SUSPECT_t$ takes 1 if ROE_t is more than the regulatory thresholds of new equity offerings but $PROE_t$ is less than the regulatory thresholds and 0 otherwise. ST_t takes 1 if if ROE_t is positive but less than the regulatory thresholds of new equity offerings and $PROE_t$ is negative and 0 otherwise. Other control variables are defined Appendix Five. All continuous variables are winsorised at the 1% and 99% levels. Two-tailed p-values are based on robust t-statistics that have been adjusted to control for the clustering by firm. ***,**,*Signify statistical significance of two-tailed tests at 1%, 5%, and 10% respectively.

Appendix Nineteen

Table A19: Earnings Management Incentive—Level Model Controlling For ROE; Dependent Variable = $ERPS_t$

VARIABLES	PREDICTED SIGNS	FULL (1999–2005)	PRE (1999–2005)	TRAN (2002)	POST (2003–2005)
$SUSPECT_t$	+	0.321***	0.373***	0.355***	0.244***
		(<0.001)	(<0.001)	(<0.001)	(<0.001)
ST_t	+	0.318***	0.361***	0.405***	0.249***
		(<0.001)	(<0.001)	(<0.001)	(<0.001)
$ERPS_{t-1}$	+	0.429***	0.392***	0.328***	0.513***
		(<0.001)	(<0.001)	(<0.001)	(<0.001)
$SIZE_t$	?	-<0.001	0.006	0.005	-0.004
		(0.998)	(0.230)	(0.452)	(0.197)
LEV_t	?	-0.043***	-0.022	-0.106***	-0.049**
		(0.001)	(0.264)	(<0.001)	(0.015)
MTB_{t-1}	?	-0.008**	-0.011**	0.011	-0.019**
		(0.026)	(0.013)	(0.240)	(0.011)
ROE_t	?	-0.006**	-0.002	-0.003	-0.008***
		(0.011)	(0.656)	(0.241)	(0.010)
Constant		-0.028	-0.167	-0.098	0.097
		(0.651)	(0.124)	(0.513)	(0.228)
IND		Y	Y	Y	Y
YEAR		Y	Y	N	Y
n		4,607	1,975	660	1,972
Adj. R^2		0.690	0.707	0.726	0.671

This table reports the results of whether firms inflate RPSs when there are earnings management incentives, using the level model. $ERPS_t$ is the difference between $RPS_t/SALE_t$ for firm i and the industry-mean level of $RPS_t/SALE_t$ excluding the own observation for which I calculate the measure. $SUSPECT_t$ takes 1 if ROE_t is more than the regulatory thresholds of new equity offerings but $PROE_t$ is less than the regulatory thresholds and 0 otherwise. ST_t takes 1 if if ROE_t is positive but less than the regulatory thresholds of new equity offerings and $PROE_t$ is negative and 0 otherwise. Other control variables are defined Appendix Five. All continuous variables are winsorised at the 1% and 99% levels. Two-tailed p-values are based on robust t-statistics that have been adjusted to control for the clustering by firm. ***,**,*Signify statistical significance of two-tailed tests at 1%, 5%, and 10% respectively.

Appendix Twenty

Table A20: The Effect of Regulation—Change Model Controlling for ROE; Dependent Variable = ΔRPS_t

VARIABLES	PREDICTED SIGNS	FULL	$\Delta RPS > 0$	ROE ≥ thresholds
$SUSPECT_t$	+	0.278***	0.186***	0.293***
		(<0.001)	(<0.001)	(<0.001)
$SUSPECT_t \times TRAN_t$	-	-0.041	-0.028	-0.053
		(0.311)	(0.471)	(0.184)
$SUSPECT_t \times POST_t$	-	-0.091***	-0.060**	-0.095***
		(0.004)	(0.046)	(0.002)
ST_t	+	0.250***	0.158***	
		(<0.001)	(0.003)	
$ST_t \times TRAN_t$	-	0.073	0.087	
		(0.339)	(0.257)	
$ST_t \times POST_t$	-	-0.020	0.015	
		(0.732)	(0.804)	
$TRAN_t$	?	<0.001	-0.021	0.025**
		(0.999)	(0.116)	(0.035)
$POST_t$	?	0.011	-0.018	0.030**
		(0.210)	(0.199)	(0.013)
RPS_{t-1}	-	-0.289***	0.055**	-0.283***
		(<0.001)	(0.039)	(<0.001)
ΔRPS_{t-1}	-	-0.103***	-0.173***	-0.130***
		(<0.001)	(<0.001)	(<0.001)
$\Delta SIZE_t$	?	-0.006	-0.006	0.020
		(0.559)	(0.793)	(0.203)
ΔLEV_t	?	-0.057**	-0.041	-0.053
		(0.018)	(0.316)	(0.175)
MTB_{t-1}	?	-0.006	0.017**	-0.004
		(0.182)	(0.036)	(0.581)
ROE_t	?	-0.001	-0.005	0.186***
		(0.521)	(0.372)	(0.006)
Constant		-0.014	0.004	-0.068***
		(0.239)	(0.858)	(<0.001)
IND		Y	Y	Y
YEAR		Y	Y	Y
n		3,950	1,442	2,005
Adj. R^2		0.379	0.312	0.434

This table reports regression results of the impact of regulation on the extent of earnings management, based on the level model. ΔRPS_t is the change in *RPS/SALE* from year t-1 to year t, calculated as $RPS/SALE_t$ - $RPS_{t-1}/SALE_{t-1}$. RPS_{t-1} is defined as $RPS_{t-1}/SALE_{t-1}$. $SUSPECT_t$ takes 1 if ROE_t is more than the regulatory thresholds of new equity offerings but $PROE_t$ is less than the regulatory thresholds and 0 otherwise. ST_t takes 1 if if ROE_t is positive and less than the regulatory thresholds of new equity offerings but $PROE_t$ is negative and 0 otherwise. Other control variables are defined Appendix Five. All continuous variables are winsorised at the 1% and 99% levels. Two-tailed p-values are based on robust t-statistics that have been adjusted to control for the clustering by firm. ***,**,*Signify statistical significance of two-tailed tests at 1%, 5%, and 10% respectively.

Appendix Twenty-One

Table A21: The Effect of Regulation—Level Model Controlling for ROE; Dependent Variable = $ERPS_t$

VARIABLES	PREDICTED SIGNS	FULL	$ERPS_t > 0$	ROE ≥ thresholds
$SUSPECT_t$	+	0.358***	0.209***	0.391***
		(<0.001)	(<0.001)	(<0.001)
$SUSPECT_t \times TRAN_t$	-	-0.035	-0.017	-0.042
		(0.213)	(0.578)	(0.123)
$SUSPECT_t \times POST_t$	-	-0.091***	-0.083***	-0.093***
		(<0.001)	(0.002)	(<0.001)
ST_t	+	0.348***	0.202***	
		(<0.001)	(<0.001)	
$ST_t \times TRAN_t$	-	0.015	0.029	
		(0.769)	(0.560)	
$ST_t \times POST_t$	-	-0.068**	-0.069**	
		(0.045)	(0.043)	
$TRAN_t$	?	0.015***	-0.026	0.017**
		(0.009)	(0.230)	(0.017)
$POST_t$	?	0.029***	-0.006	0.017**
		(<0.001)	(0.773)	(0.046)
RPS_{t-1}	+	0.427***	0.399***	0.360***
		(<0.001)	(<0.001)	(<0.001)
$SIZE_t$	?	0.001	-0.004	0.008**
		(0.829)	(0.673)	(0.042)
LEV_t	?	-0.043***	-0.081**	-0.061***
		(0.001)	(0.031)	(0.002)
MTB_{t-1}	?	-0.007**	-0.006	-0.009*
		(0.035)	(0.586)	(0.079)
ROE_t	?	-0.006**	-0.043*	0.237***
		(0.013)	(0.096)	(<0.001)
Constant		-0.048	0.155	-0.249***
		(0.450)	(0.466)	(0.005)
IND		Y	Y	Y
YEAR		Y	Y	Y
n		4,607	1,173	2,492
Adj. R^2		0.686	0.561	0.732

This table reports regression results of the impact of regulation on the extent of earnings management, based on the change model. $ERPS_t$ is the difference between $RPS_t/SALE_t$ for firm i and the industry-mean level of $RPS_t/SALE_t$ excluding the own observation for which I calculate the measure. $SUSPECT_t$ takes 1 if ROE_t is more than the regulatory thresholds of new equity offerings but $PROE_t$ is less than the regulatory thresholds and 0 otherwise. ST_t takes 1 if if ROE_t is positive but less than the regulatory thresholds of new equity offerings and $PROE_t$ is negative and 0 otherwise. Other control variables are defined Appendix Five. All continuous variables are winsorised at the 1% and 99% levels. Two-tailed p-values are based on robust t-statistics that have been adjusted to control for the clustering by firm. ***,**,*Signify statistical significance of two-tailed tests at 1%, 5%, and 10% respectively.

References

Aharony, J, Lee, C & Wong, TJ 2000, 'Financial packaging of IPO firms in China', *Journal of Accounting Research,* vol. 38, no. 1, pp. 103–126.

Aharony, J, Lin, C & Loeb, MP 1993, 'Initial public offerings, accounting choices, and earnings management', *Contemporary Accounting Research,* vol. 10, no. 1, pp. 61–81.

Aharony, J, Wang, J & Yuan, H 2010, 'Tunneling as an incentive for earnings management during the IPO process in China', *Journal of Accounting and Public Policy,* vol. 29, no.1, pp. 1–26.

Bae, K, Kang, J & Kim, J 2002, 'Tunneling or value added? Evidence from mergers by Korean business groups', *Journal of Finance,* vol. 57, no. 6, pp. 2,695–2,740.

Ball, R & Shivakumar, L 2008, 'Earnings quality at initial public offerings', *Journal of Accounting and Economics,* vol. 45, no. 2–3, pp. 324–349.

Badertscher, BA 2011, 'Overvaluation and the choice of alternative earnings management mechanisms', *The Accounting Review,* vol. 86, pp. 1,491–1,518.

Barth, ME, Clement, MB, Foster, G & Kasznik, R 1998, 'Brand values and capital market valuation', *Review of Accounting Studies*, vol. 3, no. 1–2, pp. 41–68.

Berkman, H, Cole, RA & Fu, LJ 2009, 'Expropriation through loan guarantees to related parties: evidence from China', *Journal of Banking & Finance,* vol. 33, no. 1, pp. 141–156.

Chen, KCW & Wang, J 2007, 'Accounting-based regulation in emerging markets: the case of China's seasoned-equity offerings', *The International Journal of Accounting*, vol. 42, no. 3, pp. 221–236.

Chen, KCW & Yuan, H 2004, 'Earnings management and capital resource allocation: evidence from China's accounting-based regulation of rights issues', *The Accounting Review,* vol. 79, no. 3, pp. 645–665.

Chen, S, Wang, K & Li, X 2012, 'Product market competition, ultimate controlling structure and related party transactions', *China Journal of Accounting Research,* vol. 5, no. 4, pp. 293–306.

Chen, X, Lee, C-WJ & Li, J 2008, 'Government assisted earnings management in China', *Journal of Accounting and Public Policy,* vol. 27, no. 3, pp. 262–274.

Cheng, Q & Warfield, TD 2005, 'Equity incentives and earnings management', *The Accounting Review,* vol. 80, no. 2, pp. 441–476.

Cheung, Y-L, Jing, L, Lu, T, Rau, PR & Stouraitis, A 2009a, 'Tunneling and propping up: An analysis of related party transactions by Chinese listed companies', *Pacific-Basin Finance Journal,* vol. 17, no. 3, pp. 372–393.

Cheung, Y-L, Qi, Y, Raghavendra Rau, P & Stouraitis, A 2009b, 'Buy high, sell low: How listed firms price asset transfers in related party transactions', *Journal of Banking & Finance,* vol. 33, pp. 914–924.

Cheung, Y-L, Rau, PR & Stouraitis, A 2006, 'Tunneling, propping, and expropriation: Evidence from connected party transactions in Hong Kong', *Journal of Financial Economics*, vol. 82, 343–386.

Chi, J & Gupta, M 2009, 'Overvaluation and earnings management', *Journal of Banking & Finance,* vol. 33, pp. 1,652–1,663.

Claessens, S, Djankov, S, Fan, J, Lang, L 2002, 'Disentangling the incentive and entrenchment effects of large shareholdings', *Journal of Finance,* vol. 57, no. 6, pp. 2,741–2,771.

Cohen, D, Darrough, MN, Huang, R & Zach, T 2011, 'Warranty reserve: Contingent liability, information signal, or earnings management tool?' *The Accounting Review,* vol. 86, no. 2, pp. 569–604.

Cohen, DA, Dey, A & Lys, TZ 2008, 'Real and accrual-based earnings management in the pre- and post-Sarbanes-Oxley periods', *The Accounting Review,* vol. 83, no. 3, pp. 757–787.

Cohen, DA & Zarowin, P 2010, 'Accrual-based and real earnings management activities around seasoned equity offerings', *Journal of Accounting and Economics,* vol. 50, no. 1, 2–19.

Cornett, MM, Marcus, AJ & Tehranian, H 2008, 'Corporate governance and pay-for-performance: The impact of earnings management', *Journal of Financial Economics,* vol. 87, no. 2, pp. 357–373.

Cornett, MM, NcNutt, JJ & Tehranian, H 2009, 'Corporate governance and earnings management at large U.S. bank holding companies', *Journal of Corporate Finance,* vol. 15, no. 4, pp. 412–430.

Guo, XF & Li, DQ 2002, 'The eight characteristics of related party transactions of listed companies in 2002', *China Securities News.*

CSRC 1994, 1998, 1999, 2001, 2004, 2006, *Administration of offerings of new shares by listed companies' procedures.* Beijing.

Darrough, M & Rangan, S 2005, 'Do insiders manipulate earnings when they sell their shares in an initial public offering?' *Journal of Accounting Research,* vol. 43, no. 1, pp. 1–33.

Deangelo, H, Deangelo, L & Skinner, D 1994, 'Accounting choice in troubled companies', *Journal of Accounting and Economics*, vol. 17, no. 1–2, pp. 113–143.

Deangelo, L 1986, 'Accounting numbers as valuation substitutes: a study of management buyouts of public stockholders', *The Accounting Review,* vol. 61, no.3, pp. 400–420.

Deangelo, L 1988, 'Managerial competition, information costs and corporate governance', *Journal of Accounting and Economics,* vol. 10, no. 1, 3–36.

Dechow, PM 1994, 'Accounting earnings and cash flows as measures of firm performance: the role of accounting accruals', *Journal of Accounting and Economics,* vol. 18, no. 1, pp. 3–42.

Dechow, P. M. & Skinner, D. 2000, Earnings management: reconciling the views of accounting academics, practitioners, and regulators. *Accounting Horizons,* vol. 14, no. 235–250.

Dechow, P. M. & Sloan, P.R. 1991, Executive incentives and the horizon problem: an empirical investigation. *Journal of Accounting and Economics*, 14, no. 1, 51–89.

Dechow, P. M., Sloan, P. R. & Sweeney, A. 1995, Detecting earnings management. *The Accounting Review,* vol. 70, no. 2, 193–225.

Defond, M. L. & Jiambalvo, J. 1994, Debt covenant violation and manipulation of accruals. *Journal of Accounting and Economics,* vol. 17, no. 1–2, 145–176.

Doyle, JT, Jennings, JN & Soliman, MT 2013, 'Do managers define non-GAAP earnings to meet or beat analyst forecasts?' *Journal of Accounting and Economics,* vol. 56, no. 1, pp. 40–56.

Fama, E & French, K 2000, 'Forecasting profitability and earnings', *Journal of Business,* vol. 73, pp. 161–175.

Fei, JH 2004, 'Analysis on related party transactions of SZSE-listed Companies in 2002', *Securities Market Herald* (in Chinese), vol. 3, pp. 18–19.

Friedlan, JM 1994, 'Accounting choices of issuers of initial public offerings', *Contemporary Accounting Research,* vol. 11, no. 1, pp. 1–32.

Friedman, E, Johnson, S & Mitton, T 2003, 'Propping and tunneling', *Journal of Comparative Economics,* vol. 31, no. 4, pp. 732–750.

Ge, W, Drury, DH, Fortin, S, Liu, F & Tsang, D 2010, 'Value relevance of disclosed related party transactions', *Advances in Accounting,* vol. 26, no. 1, pp. 134–141.

Gordon, EA, Henry, E, Louwers, TJ & Reed, BJ 2007, 'Auditing related party transactions: a literature overview and research synthesis', *Accounting Horizons,* vol. 21, no. 1, pp. 81–102.

Gordon, EA, Henry, E & Palia, D 2004, 'Related party transactions and corporate governance', *Advances in Financial Economics,* vol. 9, pp. 1–27.

Gu, Z & Chen, T 2004, 'Analysts' treatment of nonrecurring items in street earnings', *Journal of Accounting and Economics,* vol. 38, December, pp. 129–170.

Haw, I-M, Qi, D, Wu, D & Wu, W 2005, 'Market consequences of earnings management in response to security regulations in China', *Contemporary Accounting Research,* vol. 22, no. 1, pp. 95–140.

Healy, P & Wahlen, J 1999, 'A review of the earnings management literature and its implications for standard setting', *Accounting Horizons,* vol. 17, pp. 365–383.

Henry, E, Gordon, EA, Reed, BJ & Louwers, T 2010, 'The role of related party transactions in fraudulent financial reporting', *Journal of Forensic of Investigative Accounting*, vol. 4, pp. 186–213.

Hunton, JE, Libby, R & Mazza, CL 2006, 'Financial reporting transparency and earnings management', *The Accounting Review*, vol. 81, no. 1, pp. 135–157.

Hwang, N-C. R, Chiou, J-R & Wang, Y-C 2013, 'Effect of disclosure regulation on earnings management through related-party transactions: evidence from Taiwanese firms operating in China', *Journal of Accounting and Public Policy*, vol. 32, no. 4, pp. 292–313.

IAS Committee 1994, 'IAS 24: related party disclosures', *International Accounting Standards*, London.

IAS Committee 2009, IAS 24: related party disclosures, *International Accounting Standards*, London.

Jensen, M, Meckling, W 1976, 'Theory of the firm: managerial behavior, agency costs, and ownership structure', *Journal of Financial Economics*, vol. 3, no. 4, pp. 305–360.

Jensen, M 1993, 'The modern industrial revolution, exit, and the failure of internal control systems', *Journal of Finance,* vol. 48, no. 3, pp. 831–880.

Jian, M & Wong, TJ 2010, 'Propping through related party transactions', *Review of Accounting Studies*, vol. 15, no. 1, pp. 70–105.

Jiang, G & Wang, H 2008, 'Should earnings thresholds be used as delisting criteria in stock market?' *Journal of Accounting and Public Policy*, vol. 27, no. 5, pp. 409–419.

Jiang, G, Yue, H & Zhao, L 2009, 'Tunneling through intercorporate loans: the China experience', *Journal of Financial Economics*, vol. 98, no. 1, pp. 1–20.

Jiang, G, Lee, CMC & Yue, H 2010, 'A re-examination of China's share issue privatization', *Journal of Banking & Finance*, vol. 33, pp. 2,322–2,332.

Johnson, S, La Porta, R, Lopez-De-Silanes, F & Shleifer, A 2000, 'Tunneling', *American Economic Review*, vol. 90, no. 2, pp. 22–27.

Jones, J 1991, 'Earnings management during import relief investigations' *Journal of Accounting Research*, vol. 29, no. 2, pp. 193–228.

Kasznik, R 1999, 'On the association between voluntary disclosure and earnings management', *Journal of Accounting Research*, vol. 37, no. 1, pp. 57–82.

Kao, JL, Wu, D & Yang, Z 2009, 'Regulations, earnings management, and post-IPO performance: the Chinese evidence', *Journal of Banking & Finance*, vol. 33, pp. 63–76.

Keller, KL 1997, *Strategic brand management*, Prentice Hall, Upper Saddle River, New

Jersey.

Khanna, T, & Palepu, K 2000, 'Is group affiliation profitable in emerging markets? An analysis of diversified Indian business groups', *Journal of Finance*, vol. 55, no. 2, pp. 867–892.

Khanna, T, & Yafeh, Y 2005, 'Business groups and risk sharing around the world', *Journal of Business*, vol. 78, pp. 301–340.

Khanna, T, & Yafeh, Y 2007, 'Business groups in emerging markets: paragons or parasites?' *Journal of Economic Literature*, vol. 45, no. 2, pp. 331–372.

Khanna, KJ, Lang, M, & Wolfson, M 1993, 'Geographic income shifting by multinational corporations in response to tax rate changes', *Journal of Accounting Research*, vol. 31, pp. 141–182.

Kohlbeck, M & Mayhew, BW 2010, 'Valuation of firms that disclose related party transactions', *Journal of Accounting and Public Policy*, vol. 29, no. 2, pp. 115–137.

Kothari, SP, Leone, AJ & Wasley, CE 2005, 'Performance matched discretionary accrual measures', *Journal of Accounting and Economics*, vol. 39, no. 1, pp. 163–197.

Lindenberg, E & Stephen, R 1981, 'Tobin's q ratio and industrial organization', *Journal of Business*, vol. 54, pp. 1–32.

Lei, ACH & Song, FM 2011, 'Connected transactions and firm value: evidence from China-affiliated companies', *Pacific-Basin Finance Journal*, vol. 19, no. 5, pp. 470–490.

Liu, Q & Lu, Z 2007, 'Corporate governance and earnings management in the Chinese listed companies: a tunneling perspective', *Journal of Corporate Finance*, vol. 13, no. 5, pp. 881–906.

La Porta, R, Lopez-De-Silanes, F & Shleifer, A 1999, 'Corporate ownership around the world', *Journal of Finance*, vol. 54, no. 2, pp. 471–517.

La Porta, R, Lopez-De-Silanes, F, Shleifer, A & Vishny, R 2000, 'Agency problems and dividend policies around the world', *Journal of Finance*, vol. 55, no. 1, pp. 1–33.

La Porta, R, Lopez-De-Silanes, F, Shleifer, A & Vishny, R 2002, 'Investor protection and corporate valuation', *Journal of Finance*, vol. 57, no. 3, pp. 1,147–1,170.

Lo, AWY, Wong, RMK & Firth, M 2010, 'Can corporate governance deter management from manipulating earnings? Evidence from related-party sales transactions in China', *Journal of Corporate Finance*, vol. 16, no. 2, pp. 225–235.

Lo, K 2008, 'Earnings management and earnings quality', *Journal of Accounting and Economics*, vol. 45, no. 2–3, pp. 350–357.

McNichols, MF 2000, 'Research design issues in earnings management studies', *Journal of Accounting and Public Policy*, vol. 19, no. 4–5, pp. 313–345.

McNichols, MF 2002, 'Discussion of the quality of accruals and earnings: the role of accrual estimation errors', *The Accounting Review*, vol. 77, no. s-1, pp. 61–69.

McNichols, MF & Stubben, SR 2008, 'Does earnings management affect firms' investment decisions?' *The Accounting Review*, vol. 83, no. 6, pp. 1,571–1,603.

McVay, SE 2006, 'Earnings management using classification shifting: an examination of core earnings and special items', *The Accounting Review*, vol. 81, no. 3, pp. 501–531.

MOF 1997, *Disclosure of related party relationships and transactions*, Beijing.

MOF 2001, *Provisional regulation on the accounting for sales of assets and other transactions between related parties*, Beijing.

MOF 2006, *Accounting standards for business enterprises*, Beijing.

Noronha, C & Zeng, Y 2010, 'Earnings management in China: an exploratory study', *Managerial Auditing Journal*, vol. 23, no. 4, pp. 367–385.

PAN, F., WEN, D.H. & DUAN, J. S. 2006. Related-party purchases and sale, price regulation and value correlation, Journal of Finance and Economics (in Chinese), 32, 60-69

Peng, WQ, Wei, KC & Yang, Z 2010, 'Tunneling or propping: evidence from connected transactions in China', *Journal of Corporate Finance*, vol. 17, no. 2, pp. 306–325.

Penman, S & Zhang X 2002, *Modeling sustainable earnings and P/E ratios with financial statement analysis*, working paper. Columbia University and University of California.

Petersen, M 2009, 'Estimating standard errors in finance panel data sets: comparing approaches', *Review of Financial Studies*, vol. 22, no.1, pp. 435–480.

Ritter, JR 1991, 'The long-run performance of initial public offerings', *Journal of Finance*, vol. 46, pp. 3–27.

Pizzo, M 2013, 'Related party transactions under a contingency perspective', *Journal of Management & Governance*, vol. 17, no. 1, pp. 309–330.

Rangan, S 1998, 'Earnings management and the performance of seasoned equity offerings', *Journal of Financial Economics*, vol. 50, no. 1, pp. 101–122.

Roychowdhury, S 2006, 'Earnings management through real activities manipulation', *Journal of Accounting and Economics*, vol. 42, no. 3, pp. 335–370.

Schultz Jr, JJ & Tang, Y 2004, 'Experimental judgment about related party transactions in China', *Advances in International Accounting*, vol. 17, pp. 31–54.

Simon, CJ & Sullivan, MW 1993, 'The measurement and determinants of brand equity: a financial approach', *Marketing Science*, vol. 12, no. 1, pp. 28–52.

Sloan, RG 1996, 'Do stock prices fully reflect information in accruals and cash flows about future earnings? *The Accounting Review*, vol. 71, no. 3, pp. 289–315.

Stubben, SR 2010, 'Discretionary revenues as a measure of earnings management', *The Accounting Review*, vol. 85, no. 2, pp. 695–717.

Swartz, M & Watkins, S 2003, *Power failure, the insider story of the collapse of Enron*, Doubleday, New York.

Sweeney, AP 1994, 'Debt-covenant violations and managers' accounting responses', *Journal of Accounting and Economics*, vol. 22, no. 1–3, pp. 249–281.

Tan, W 2004, 'Cure for listed companies' debts?' *Beijing Review*, vol. 47, pp. 36–38.

Tan, J & Liu, WW 2007, 'Hiding related party transactions: a new tactic of listed firms', *Cooperative Economics and Technology* (in Chinese), November, vol. 46, pp. 23–32.

Thomas, LG 1989, 'Advertising in consumer goods industries: durability, economies of scale, and heterogeneity', *Journal of Law and Economics*, vol. 32, pp. 163–193.

Teoh, SH, Welch, I & Wong, TJ 1998, 'Earnings management and the long-run underperformance of seasoned equity offerings', *Journal of Financial Economics*, vol. 50, no. 1, pp. 63–99.

Watts, R & Zimmerman, J 1986, *Positive accounting theory*. Prentice Hall Press, London.

Wooldridge, JM 2009, *Introductory econometrics: a modern approach,* Cengage Learning, South-Western, USA.

Yeh, Y-H, Shu, P-G & Su, Y-H 2012, 'Related-party transactions and corporate governance: the evidence from the Taiwan stock market', *Pacific-Basin Finance Journal*, vol. 20, no. 5, pp. 755–776.

Yu, Q, Du, B & Sun, Q 2006, 'Earnings management at rights issues thresholds—evidence from China', *Journal of Banking & Finance*, vol. 30, pp. 3,453–3,468.

Zhang, XM 2004, 'A new trend in related party transactions and governance issues', *Accounting Monthly* (in Chinese), vol. 3, pp. 18–19.